JENSEN HUGHES

Rossdale Power Plant Advanced Assessment and Priority Rehabilitation

Building and Fire Code Assessment

DFS | MBAC | Saucier + Perrotte Architectes
Submitted to: City of Edmonton
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Traditional Land Acknowledgement

We respectfully acknowledge that Edmonton is known by the nêhiyawak (the Cree people) as ᐊᒥᐢᑲᐧᒋᐚᐢᑲᐦᐃᑲᐣ (amiskwacîwâskahikan). It is a traditional gathering place for a diverse group of Indigenous peoples, including the nêhiyaw (Cree), Tsuut'ina, Niitsitapi (Blackfoot), Métis, Nakota Sioux, Haudenosaunee (Iroquois), Dene, Suliné, Anishinaabe/Ojibway/Saulteaux, Inuit, and many others who continue to make this place their home and whose histories, languages, and cultures continue to influence our vibrant community today. The Rossdale Power Plant lies on lands governed by Treaty 6, which encompasses 17 First Nations. In addition, it is acknowledged that the Rossdale site has been a gathering place of Indigenous peoples for thousands of years, and that it has special association with the Traditional Burial Ground and Fort Edmonton Cemetery nearby. The city of Edmonton owes its strength and vibrancy to these lands and the diverse Indigenous peoples whose ancestors' footsteps have marked this territory.

Settlers from around the world who continue to be welcomed here and call Edmonton home, further contribute to the City's resilience and diversity. Together we call upon all our collective honoured traditions and spirits to work in building a great city for today and future generations. We would like to thank the Indigenous communities who participated in The Rivers Crossing Business Plan & Heritage Interpretation Plan engagement sessions. The contributions provided were greatly appreciated and it is hoped that the knowledges and stories shared are reflected here.

Project Team

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The City of Edmonton

Past Owner
EPCOR

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Alberta Culture, Multiculturalism and Status of Women

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ROSSDALE POWER PLANT REHABILITATION

SCOPE DEFINITION FOR BUILDING CODE COMPLIANCE

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1.1 MAJOR OCCUPANCY IMPACT OVERVIEW

This report is intended to be provided as a conceptual building code compliance document to identify high-level key fire, life safety and accessibility requirements of Division B, Part 3 of the National Building Code – 2019 Alberta Edition (NBC(AE)) that are applicable to the proposed rehabilitation and [potential] upgrades of the existing City of Edmonton's, Rossdale Power Plant.

This executive summary identifies [at a high-level only] the potential impact of each proposed [future] major occupancy (i.e. Group A, Division 1, Group A, Division 2, Group D and Group E only) that could be adopted as an occupancy as part of the existing Rossdale Power Plant rehabilitation project and how this relates to the extent of works required to meet code compliance. **Table 1-1** below provides an indicative overview of the [potential] impact on the existing buildings as it relates to NBC(AE) Division B, Part 3 only.

Based on the site visit(s), information provided, and discussions with the property/client representatives, the following [high-level] impact levels are provided in order to identify the amount of effort required to achieve the minimum levels of life safety as required by provincially recognized codes and standards:

Impact Level I: The provision regarding change of an occupancy type to the identified [listed] major occupancy(s) are critical to achieving an acceptable level of life safety and regulatory requirements of the NBC(AE). Future alterations and/or renovations to the building(s) will trigger compliance with current code requirements and subsequent works that are considered to be **substantial**.

Impact Level II: The provision regarding change of an occupancy type to the identified [listed] major occupancy(s) are critical to achieving an acceptable level of life safety and regulatory requirements of the NBC(AE). Future alterations and/or renovations to the building(s) will trigger compliance with current code requirements and subsequent works that are considered to be **extensive**.

Impact Level III: The provision regarding change of an occupancy type to the identified [listed] major occupancy(s) are critical to achieving an acceptable level of life safety and regulatory requirements of the NBC(AE). Future alterations and/or renovations to the building(s) will trigger compliance with current code requirements and subsequent works that are considered to be **reasonable**.

Table 1-1: Indicative Impact of Major Occupancy to the Existing Building(s)[1]

Building Feature	Existing Condition	Group A1	Group A2	Group D	Group E
Boiler Hall	Does not meet many provisions under NBC(AE).	II	I	I	I
Turbine Hall	Does not meet many provisions under NBC(AE).	II	I	I	I
Switch House	Does not meet many provisions under NBC(AE).	I	I	I	I
Pump House #1	Does not meet many provisions under NBC(AE).	I	I	I	I
Pump House #2	Does not meet many provisions under NBC(AE).	I	I	I	I
ATCO Gas Building	Meets some provisions under NBC(AE), but not all.	III	III	III	III

Notes: [1] The "Impact Levels" listed are purely indicative and are provided as a "snapshot" of the existing buildings only. Due to the project being within its conceptual stages of development coupled with the many potential unknowns of future use, the above table should be used as guidance only and is not considered definitive and/or exhausted.

2.0 Introduction

2.1 PROJECT OVERVIEW

This report is intended to be provided as a conceptual building code compliance document to identify high-level key fire, life safety and accessibility requirements of Division B, Part 3 of the National Building Code – 2019 Alberta Edition (NBC(AE)) that are applicable to the proposed rehabilitation and [potential] upgrades of the existing City of Edmonton's Rossdale Power Plant. The Rossdale Power Plant building site spans four titled lots, one located at 9469 Rossdale Ave W & three described at 10155 96 Ave NW, Edmonton, Alberta, T5K 0A5 (known herein as the "Project"). This document is intended to support the Rossdale Power Plant Conservative Plan and provide a conceptual review in presenting various options of upgrades to the building's existing fire and life safety provisions (Refer to **Appendix F.1** of this report for Accessibility Code Compliance completed as a separate analysis) that are to be considered moving forward for a range of potential occupancy uses (i.e. Group A - Division 1, Group A - Division 2, Group D and Group E only) of the Project site (refer to **Section 4.0** of this report for further information).

As per the executive summary of the Rossdale Power Plant Conservative Plan, the overarching objective is to develop the conservation planning necessary to guide the future adaptive re-use of the Rossdale Power Plant site that is made up of the following buildings:

- Low Pressure Power Plant (containing the: Switch House, Turbine and Boiler Hall),
- Pump House #1,
- Pump House #2, and
- ATCO Gas Building.

The Project will execute this in a manner that protects and rehabilitates the character defining features of the aforementioned buildings while ensuring that the site continues to contribute in a meaningful and substantive way to Edmonton's civic life.

In addition to the assessment and rehabilitation scope definition efforts, this Project will include a varied amount of construction work to address life and fire safety concerns that currently prevent the buildings from containing various occupancies.

As per the Rossdale Power Plant Conservative Plan, the project team's goals for the Project are as follows:

1. Adaptively re-use site buildings to give a new lease of life for these buildings and to bring Edmontonians to the site.
2. Protect and reinforce the historic relationships of industrial processes and networks of systems between and within buildings and spaces, including the landscape.
3. Conserve and interpret the relict evidence of site-development, obsolescence, and change of use over time.
4. Conserve the Low-Pressure Plant's Architecture and decorative program.
5. Conserve the architecture, industrial equipment and relationships, and decorative program of the Pump House #1 design.
6. Conserve the design of Pump House #2.
7. Foster ongoing development of interpretative programs to help convey earlier site histories that establish the site as a locus of deep and powerful historic connections, a network beyond the notion of site, to help convey contemporary Indigenous, local, and regional heritage values.

2.2 OBJECTIVES AND SCOPE

The objectives of this document are to identify high-level provisions for the existing Project when benchmarked against NBC(AE), Division B, Part 3. Then, assess how to, at a conceptual level only, implement that provision through either: prescriptive, as near as reasonably practicable (ANARP) and/or performance-based design (PBD) approaches. This will be at the discretion of the client and subjected to the review and authorization from the Authority Having Jurisdiction (AHJ). This document will serve only as a means to convey building code requirements by providing a conceptual 'road map' to what approaches might be considered in the near future.

Design features not specifically referenced in this report are to be reviewed (as required) separately in conformance with the NBC(AE) and its referenced documents. Unless otherwise identified, all references in this report are with respect to Division B, Part 3 of the NBC(AE). The versions of referenced documents in this report is as per Section 1.3. of the NBC(AE).

2.3 DESIGN FRAMEWORK

For consistency, the Project will be benchmarked against the following documents:

- National Building Code 2019 – Alberta Edition (NBC(AE)),
- National Fire Code 2019 – Alberta Edition (NFC(AE)),
- City of Edmonton Policy C602 – Accessibility for People with Disabilities, Administrative Directive A1472, and
- City of Edmonton's Access Design Guide Version 3.

The AHJ for the Project is the City of Edmonton (CoE).

The documents referenced above are currently applicable in Alberta/Edmonton. These documents are periodically updated, and the design/alterations will have to meet the applicable documents at the time of design/construction/occupancy.

2.4 REGULATORY REQUIREMENTS

The NBC(AE) is not intended to be applied retroactively to existing buildings, unless an owner wishes to rehabilitate a building, change its use, or build an addition. The Building Code application to existing buildings requires careful consideration of the level of safety needed for that building. Article 1.1.1.2. of Division A of the NBC(AE) permits the AHJ to accept an alternative or a proposal that achieves the appropriate level of safety as well as existing construction that may not be in complete compliance with the Code.

The application of the NBC(AE) to existing buildings is summarized in Note A-1.1.1.2.(2) as:

"If a building is altered, rehabilitated, refurbished, renovated or repaired, the level of life safety and building performance shall not be decreased."

The Rossdale Power Plant Rehabilitation Project includes existing heritage buildings listed under the Provincial Historic Resource (PHR); therefore, the intent of this document is to demonstrate that any proposed design efforts:

- Are conducted in conformance with the NBC(AE),
- Any new work does not create new non-confirming conditions with respect to the NBC(AE), and
- The new work does not decrease the level of performance of the building from the existing condition.

Where conformance to the building code cannot be achieved due to existing constraints associated with the building's age and/or heritage requirements, a high-level discussion will be provided within this document at that particular section outlining the proposed mitigating measures to be considered going forward of that non-conformance. The application of the NBC(AE) is dependent on several factors including extent of the alterations, change of use, heritage considerations, impractical upgrades, etc.

2.5 REFERENCED INFORMATION

The following documentation as listed within **Table 2-1** has been reviewed in the preparation of this report. Please note that any variation to the below listed documents may invalidate the conclusions of the report.

Table 2-1: Sources of Referenced Information

Document Title	Drawing No.	Date Referenced
Low Pressure Plant – Floor Plans: Architectural Drawing Set	H200 - No. 3	2021-03-12
Boiler Hall – Floor Plans: Architectural Drawing Set	H215 - No. 5	2021-03-12
Turbine Hall – Floor Plans: Architectural Drawing Set	H200 - No. 3	2021-03-12
Switch House – Floor Plans: Architectural Drawing Set	H201 – No. 7	2021-03-12
Pump House 1 – Floor Plans: Architectural Drawing Set	H200 – No. 3	2021-03-04
Pump House 2 – Floor Plans: Architectural Drawing Set	H200 – No. 3	2021-03-03
ATCO Gas House - – Floor Plans: Architectural Drawing Set	H200 – No. 5	2021-03-12

2.6 LIMITATION OF LIABILITY

It is the responsibility of the registered professionals of record to incorporate building code measures described herein, into the design, building permit, and construction documents as and where required.

2.7 ALTERNATIVE APPROACHES

Jensen Hughes has extensive experience in delivering and supporting complex project buildings in Alberta and within wider Canada. This experience has allowed us to develop an understanding of the unique challenges and design aspirations for certain building types. Such approaches could provide value to the Rossdale Power Plant project through meeting additional objectives that include:

- Sustainability,
- Inclusivity, and
- Open spatial design with communicating spaces.

In light of the above-mentioned objectives, such a design can trigger inhibitive fire precautions that would restrict the full benefit of the existing project buildings. If desired an alternative solution utilizing a performance-based design approach could be undertaken to rationalize the prescriptive provisions of NBC(AE) as detailed within **Table 6-1** and **Table 10-1**.

Should such an approach be explored, the following benefits may be realized: rationalization of egressing components, sprinkler omission from tall ceilings, vestibules, protected floor spaces(s) and pressurization omission, draft stops and combustibles limits omitted or further rationalized. Furthermore, the design of the smoke control system(s) could be developed and optimized using computational fluid dynamics (CFD) as an analysis tool to explore either a mechanical or natural smoke exhaust approach. This could allow for efficacy of the system, a possible reduction in system sizing and drive a more sustainable design.

At this time, this is not covered under the current scope of works, however, a brief overview of approach relating to these items have been listed within **Table 6-1** and **Table 10-1**.

The alternative approaches as listed throughout this report and within **Table 6-1** and **Table 10-1** are subject to further review, discussion and consideration from the client prior to being explored. Such approaches are not guaranteed and will require evaluation and analysis first to establish if a solution can be progressed further. Note, any alternative solution is subjected to the review and consideration of the AHJ, this will bring a level of compliance risk to the approach and project moving forward.

3.0 Building Description

3.1 BUILDING INTRODUCTION & SITE DESCRIPTION

The Rossdale Power Plant Site is located in Edmonton, Alberta on the North bank of the North Saskatchewan River on the Rossdale flat, approximately 10 metres above average river level. Its properties' bounds the North end of Walterdale Bridge and 105 Street NW. The property also neighbours the EPCOR Substation that is South of Rossdale Road NW, at the intersection of 105 Street NW. The Project includes existing heritage buildings listed under the Provincial Historic Resource (PHR).

The Rossdale Power Plant Site description is provided as follows and **Figure 3-1** provides a visual overview of the site plan:

- The Green Highlighted building represents the Switch House [1.], the Orange Highlighted building represents the Turbine Hall [2.] and the Red Highlighted building represents the Boiler hall [3.], these three buildings make up the Low-Pressure Power Plant Building (refer **Figure 3-2**) and are considered a single building for the application of the NBC(AE),
- The Blue Highlighted building represents Pump House 1 [4.] (refer **Figure 3-4**),
- The Yellow Building represents Pump House 2 [5.] (refer **Figure 3-5**), and
- The Purple Buildings represent the ATCO Gas Building [6.] (refer **Figure 3-6**).

Figure 3-1: Site Plan of the Existing Project

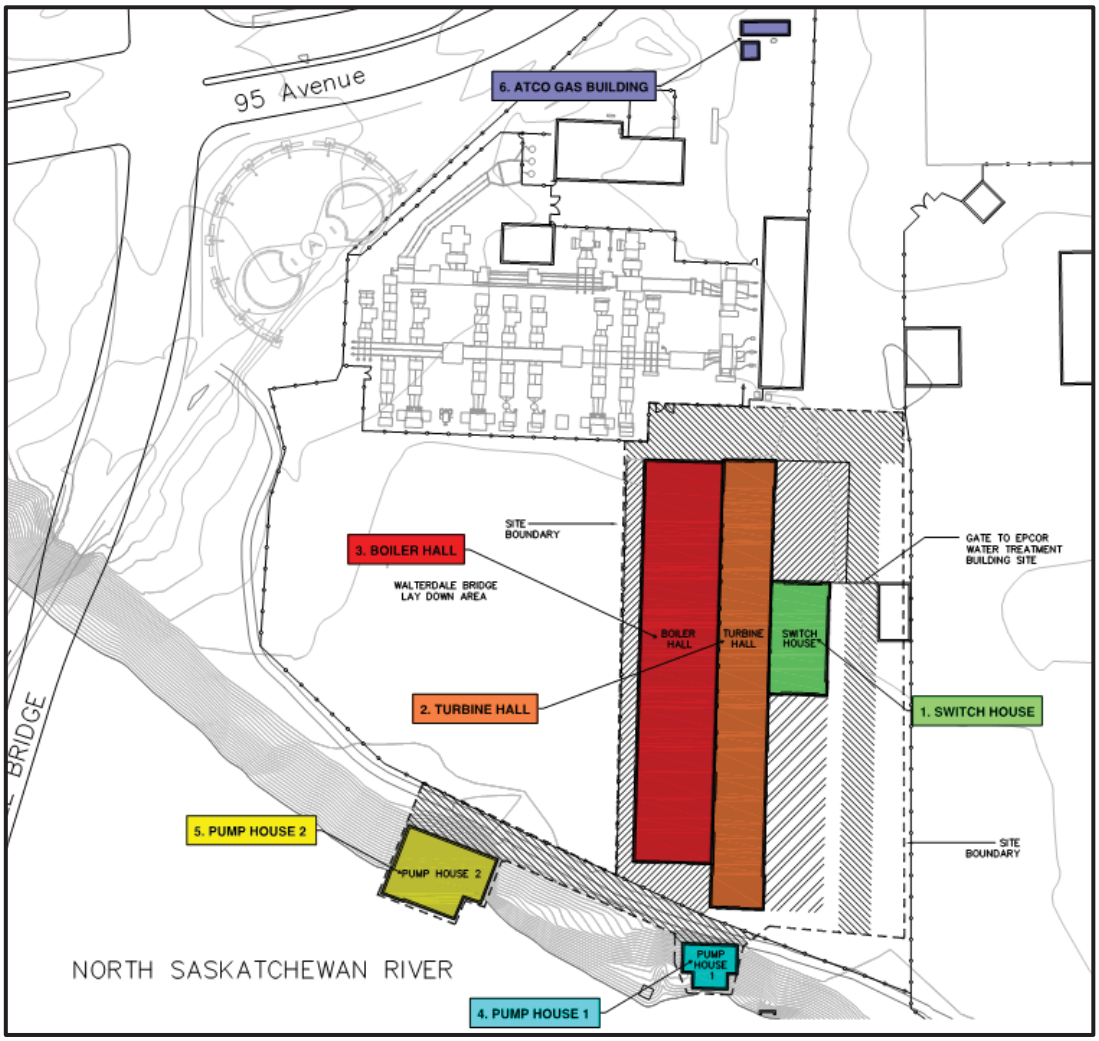


Figure 3-2: Birdseye View of Site Plan – Switch House, Turbine and Boiler Hall

Figure 3-3: Photograph of the Switch House

Figure 3-4: Photograph of Pump House #1

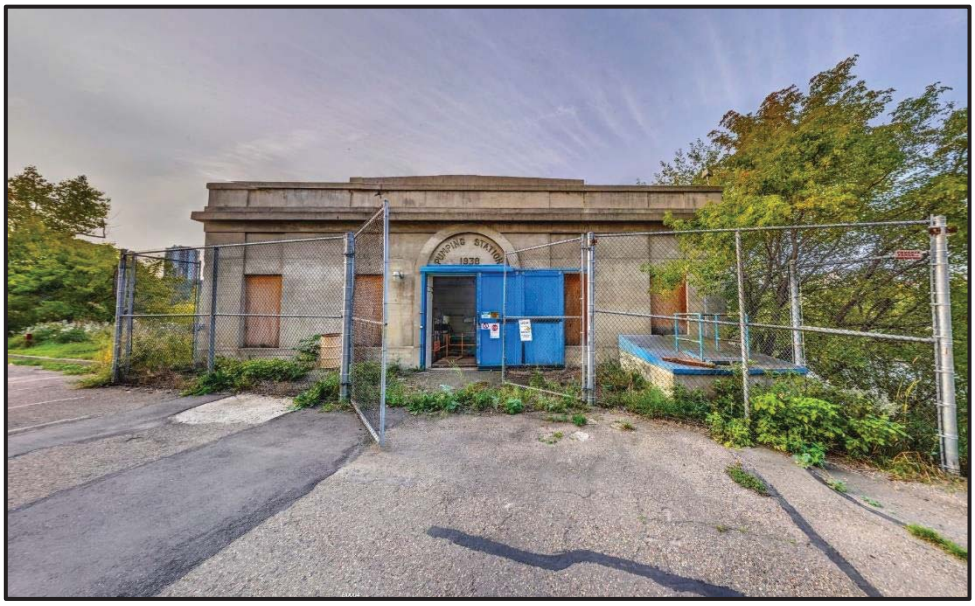


Figure 3-5: Photograph of Pump House #2

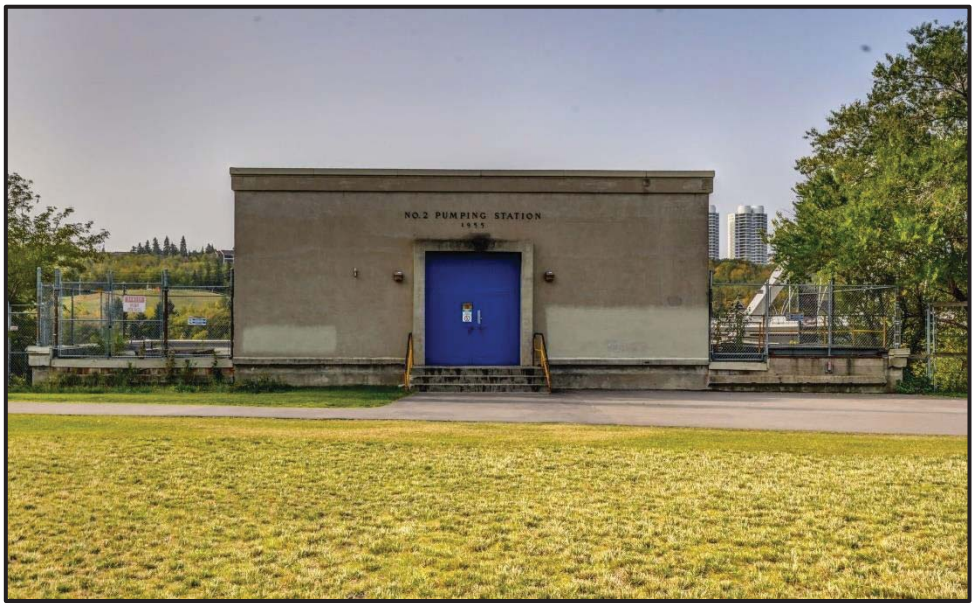


Figure 3-6: Photograph of the ATCO Gas Building (No Access Provided to Date)

4.0 Building Attributes and Construction Requirements

4.1 GENERAL BUILDING ATTRIBUTES

To understand a building's general attributes, it is pertinent to determine its 'major occupancy'. A major occupancy is defined as the principal occupancy for which the building or part thereof is used or intended to be used. As it is not yet understood how the Project buildings will be used/occupied, a range of major occupancies are to be explored for the Project and are listed as follows:

- Group A, Division 1 – Assembly occupancies intended for the production and viewing of performance arts,
- Group A, Division 2 – Assembly occupancies not elsewhere classified in Group A,
- Group D – Business and personal services occupancies, and
- Group E – Mercantile occupancies.

The buildings may contain several different major occupancies. However, the purposes of this analysis, the buildings are considered to contain one of the major occupancies identified above. In addition, the buildings are assumed to contain a single tenant. Additional requirements may apply if there are more than one major occupancy in the buildings as well as separated tenants.

For the application of building attributes, each building is considered a separate building as follows:

- Low Pressure Plant (made-up of Switch House, Turbine and Boiler Hall),
- Pump House #1 (the connecting tunnel between Pump House #1 and the Low-Pressure Plant is to be provided with a closure achieving a nominating fire protection rating to suitably separate these buildings),
- Pump House #2, and
- ATCO Gas Building.

The following tables provide a summary of each building attributes:

Table 4-1: Summary of Building Attributes (Low Pressure Power Plant)

Attribute	Value
Future Major Occupancy Classification	Group A1, A2, D and/or E
Building Height (m)#	24.1
Building Height (m)^	17.2
No. of Storeys	2
Building Area (m²)	4545.6
Streets Facing	1*
Building Description	Comprises of Switch House, Turbine and Boiler Hall: The **Switch House** has a Basement, Main Floor and Second Floor. It is proposed to separate the Switch House from the remainder of the Low-Pressure Power Plant by a fire separation with a fire resistance rating of 2 h (refer to **Section 5.1** and **Appendix B** of this report for further information). The **Turbine Hall** has Basement Level that is open to the Main Floor above, it connects to the Switch House through doorways, however, it opens directly into the adjacent Boiler Hall. The **Boiler Hall** has a Basement level open to the Main Floor above and a Mezzanine Level above. The Boiler Hall opens directly into the adjacent Turbine Hall.
Existing Building Construction Description	Constructed with a curtain wall of Brick and Cast Masonry Units reinforced by the structural steel framing, floors consist of concrete slabs, roofing is made up of corrugated steel [type] decking with a polymeric membrane system covering. Unprotected structural steel elements (columns/beams) are also observed throughout.

Table 4-2: Summary of Building Attributes (Pump House #1)

Attribute	Value
Future Major Occupancy Classification	Group A1, A2, D and/or E
Building Height (m)[#]	20.8
Building Height (m)^	16.0
No. of Storeys[+]	5
Building Area (m²)	165
Streets Facing	1[$]
Building Description	**Pump House #1** is accessed from the adjacent trail at [typical] ground level, however, grade would be classified to the rear of the building where this extends down to the river behind (lower 4 level). The building is entered at the main floor level ([typical] ground), however, the building is fully open and atmospherically connected throughout and drops away below. The building has a very unique configuration that introduces many challenges from a building code perspective (refer to **Appendix C** of this report for further information).
Existing Building Construction Description	Structurally reinforced concrete building, flooring is of concrete slabs, roofing is made up of precast slabs supported by transverse I-beams. Unprotected structural steel elements (columns/beams) are also observed throughout.

Table 4-3: Summary of Building Attributes (Pump House #2)

Attribute	Value
Future Major Occupancy Classification	Group A1, A2, D and/or E
Building Height (m)[#]	22.66
Building Height (m)^	16.7
No. of Storeys[+]	6
Building Area (m²)	448
Streets Facing	1[$]
Building Description	Similar to Pump House #1, **Pump House #2** is also accessed from the adjacent trail at [typical] ground level, however, again grade would be classified to the rear of the building where this extends down to the river behind (lower 5 level). The building is entered at the main floor level ([typical] ground), however, the building is fully open and atmospherically connected throughout and drops away below. The building is very similar to Pump House #1 and has a very unique configuration that introduces many challenges from a building code perspective (refer to **Appendix D** of this report for further information). Unprotected structural steel elements (columns/beams) are also observed throughout.
Existing Building Construction Description	Structurally reinforced concrete building with a cinder block and steel construction penthouse, flooring is of concrete slabs, roofing is made up of precast slabs supported by transverse I-beams. Unprotected structural steel elements (columns/beams) are also observed throughout.

Table 4-4: Summary of Building Attributes (ATCO Gas House)

Attribute	Value
Future Major Occupancy Classification	Group A1, A2, D and/or E

Attribute	Value
Building Height (m) [#]	2.166
No. of Storeys	1
Building Area (m²)	73
Streets Facing	1*
Building Description	**ATCO Gas House** requires a site visit to determine its building description (refer to **Appendix E** of this report for further information).
Existing Building Construction Description	Noncombustible, a site visit is to confirm the remaining construction as access has not been provided to date.

Notes:

* Refer **Section 6.1** of this report for further information pertaining to Fire Department Access Route.

[$] Pump House #1 and #2 do not face a street nor are served by Fire Department Access Route, refer to **Section 6.1** of this report for further information.

[#] The building height is measured from grade to the top of roof.

^ The building height is measured from grade level to top of upper most storey.

[+] Pump Houses #1 & #2 have a unique configuration, it is possible that in the original design, the construction used the provision of Sentence 3.2.1.1.(6) to avoid being considered a 5 or 6 storey building. This analysis identifies the worst-case scenario in calculating the number of storeys.

4.1.1 Floor Levels not Considered as Storeys

The rooftop elevator machine room in the Low-Pressure Power Plant [accessed from the detailed ‘mezzanine’ level] is used for services only and has not been considered as a storey for the purposes of determining building height for the Project, as per Sentence 3.2.1.1.(1).

4.2 APPLICABLE GENERAL CONSTRUCTION REQUIREMENTS

The general construction requirements are determined based on building area, building height, and major occupancy classification as covered within **Section 4.1**. The general construction requirements determined by Articles 3.2.2.20. to 3.2.2.90. for the Rossdale Power Plant Site also dictate other fire and life safety requirements.

This Project is subject to the following general construction requirements outlined in Subsection 3.2.2. (**Table 4-5** through **Table 4-7**) with consideration of Subsection 3.2.4. and Article 3.2.5.8.

Table 4-5: Summary of Applicable General Construction Requirements (Low-Pressure Power Plant)

Building Feature	Existing	Group A1	Group A2	Group D	Group E
Construction Article	N/A	3.2.2.20.	3.2.2.24.	3.2.2.61. (building area = < 7,200m^2)[2]	3.2.2.64.
Construction Type	Noncombustible	Noncombustible	Noncombustible	Noncombustible or combustible	Noncombustible
Floor Assembly Rating	TBD – Solid Concrete Slab supported upon a combination of concrete columns and unprotected steel structure.	2 h	1 h	45 min	2 h
Roof Assemblies[1]	TBD	[1]	[1]	[1]	[1]
Mezzanine Assemblies	TBD – Solid Concrete Slab supported upon a combination of concrete columns and unprotected steel structure.	1 h	1 h	45 min	1 h
Loadbearing walls, columns and arches	TBD – A combination of concrete columns and unprotected steel structure.	Equal to or greater than that required for supported assembly *[2 h for Floor Assemblies 1 h for Mezzanines]*	Equal to or greater than that required for supported assembly *[1 h for Floor Assemblies 1 h for Mezzanines]*	Loadbearing elements to be 45 min or noncombustible *[45 min for Floor Assemblies 45 min for Mezzanines]*	Equal to or greater than that required for supported assembly *[2 h for Floor Assemblies 1 h for Mezzanines]*
Sprinklers	Not provided.	Required - system is to comply with NFPA 13-2013	Required - system is to comply with NFPA 13-2013	Required - system is to comply with NFPA 13-2013	Required - system is to comply with NFPA 13-2013
Standpipe	Not Provided.	Required - system is to comply with NFPA 14-2013	Required - system is to comply with NFPA 14-2013	Required - system is to comply with NFPA 14-2013	Required - system is to comply with NFPA 14-2013
Fire Alarm	Not Provided.	Required - system is to comply with	Required - system is to comply with	Required - system is to comply with	Required - system is to comply with

Building Feature	Existing	Group A1	Group A2	Group D	Group E
		CAN/ULC-S524-14	CAN/ULC-S524-14	CAN/ULC-S524-14	CAN/ULC-S524-14

Table 4-6: Summary of Applicable General Construction Requirements (Pump House #1 & #2)

Building Feature	Existing	Group A1	Group A2	Group D	Group E
Construction Article	N/A	3.2.2.20.	3.2.2.24.	3.2.2.57. (building area[2]: Pump House #1 = < 8,640m^2 and Pump House #1 = < 7,200m^2)	3.2.2.64.
Construction Type	Noncombustible	Noncombustible	Noncombustible	Noncombustible	Noncombustible
Floor Assembly Rating	TBD – Solid Concrete Slab supported upon a combination of concrete columns and unprotected steel structure.	2 h	1 h	45 min	1 h
Roof Assemblies[1]	TBD	[1]	[1]	[1]	[1]
Mezzanine Assemblies	TBD – Solid Concrete Slab supported upon a combination of concrete columns and unprotected steel structure.	1 h	1 h	45 min	1 h
Loadbearing walls, columns and arches	TBD - A combination of concrete columns and unprotected steel structure.	Equal to or greater than that required for supported assembly *[2 h for Floor Assemblies 1 h for Mezzanines]*	Equal to or greater than that required for supported assembly *[1 h for Floor Assemblies 1 h for Mezzanines]*	Loadbearing elements to be 45 min or noncombustible *[45 min for Floor Assemblies 45 min for Mezzanines]*	Equal to or greater than that required for supported assembly *[1 h for Floor Assemblies 1 h for Mezzanines]*
Sprinklers	Not provided.	Required - system is to comply with NFPA 13-2013	Required - system is to comply with NFPA 13-2013	Required - system is to comply with NFPA 13-2013	Required - system is to comply with NFPA 13-2013
Standpipe	Not Provided.	Required - system is to comply with NFPA 14-2013	Required - system is to comply with NFPA 14-2013	Required - system is to comply with NFPA 14-2013	Required - system is to comply with NFPA 14-2013
Fire Alarm	Not Provided.	Required - system is to comply with	Required - system is to comply with	Required - system is to comply with	Required - system is to comply with

Building Feature	Existing	Group A1	Group A2	Group D	Group E
		CAN/ULC-S524-14	CAN/ULC-S524-14	CAN/ULC-S524-14	CAN/ULC-S524-14

Table 4-7: Summary of Applicable General Construction Requirements (ATCO Gas Building)

Building Feature	Existing	Group A1	Group A2	Group D	Group E
Construction Article	N/A	3.2.2.21.	3.2.2.28. (building area = < 400m^2)	3.2.2.62. (building area = < 1,000m^2)[3]	3.2.2.68. (building area = < 1,000m^2)[3]
Construction Type	Non-combustible	Noncombustible or heavy timber combustible	Noncombustible or combustible	Noncombustible or combustible	Noncombustible or combustible
Floor Assembly Rating	N/A	N/A (single storey)	N/A (single storey)	N/A (single storey)	N/A (single storey)
Roof Assemblies[1]	TBD	[1]	[1]	[1]	[1]
Mezzanine Assemblies	N/A	N/A	N/A	N/A	N/A
Loadbearing walls, columns and arches	N/A	N/A	N/A	N/A	N/A
Sprinklers	Not provided	N/A	N/A	N/A	N/A
Standpipe	Not Provided	N/A	N/A	N/A	N/A
Fire Alarm	Not Provided	N/A	N/A	N/A	N/A (unless otherwise required by the Code i.e. if this were to be a childcare facility)

Notes:

[1] As per Sentence 3.1.15.2.(1) every roof covering is required to have a Class A, B or C classification determined in conformance with CAN/ULC-S107-10, “Fire Tests of Roof Coverings”.

[2] Other construction requirements could be applied to the building. For example, Article 3.2.2.56. could be applied which does not require sprinklers but requires enhanced fire ratings and noncombustible construction.

[3] Although NBC(AE) Part 9 could be applicable to this building, for the purposes of this analysis, the building has been evaluated relative to Part 3 only.

5.0 Fire Separations and Fire Rated Assemblies

The following Sections are provided as high-level information for details pertaining to fire separations and fire rated assemblies within the Project.

5.1 GENERAL

Where assemblies are required to have a fire-resistance rating, the ratings are to be determined on the basis of the results of testing in accordance with CAN/ULC-S101-14, “Fire Endurance Tests of Building Construction and Materials” or assigned a rating on the basis of Appendix D.

Fire separations must be constructed as continuous elements, extending from the floor through the ceiling elements, and horizontal service spaces to the underside of the floor or roof deck above as per Article 3.1.8.3.

Fire-rated assemblies are to be listed by ULC, cUL, Interek (WH) or other acceptable agency or determined on the basis of Appendix D of the NBC(AE).

The actual fire-resistance rating of the existing assemblies may only be able to be determined through destructive testing. However, if detailed information of the assembly is available, a judgement may be able to be made of the fire expected fire-resistance rating of the assembly.

Refer to **Appendix 0** for high-level requirements associated with fire separations within the Project. At this stage, there are many considerations and direction required by the end client in order to determine the definitive location of proposed fire separations that are associated with the preferred end occupancy. This document provides high-level and indicative areas where fire separations are anticipated, however, this will be subject to change. In addition, many fire separations are dependent on the client’s appetite and desire to explore the possible derogation listed in **Table 10-1**, the outcome of this decision will greatly influence the location of fire separation(s).

Further considerations regarding fire separations and fire rated assemblies for possible future designs are also to be considered, however, at this stage in the project such scenarios are still unknown. Article 3.3.2.14. requires specific design provisions for stages for theatrical performances relating to fire separations that are to be considered should such a design be incorporated within the future.

5.2 OPENINGS IN FIRE SEPARATIONS

Where an assembly is required to be constructed as a fire separation and will be penetrated by openings such as for doors, ducts or building services, the openings or penetrations are required to be provided with an appropriate means to maintain the integrity of the fire separation (refer to **Section 5.4** of this report for further information).

5.3 FIRESTOPPING

Where building services such as cables, wiring, piping, or similar services will penetrate a fire separation required to have a fire-resistance rating, the penetration is to be protected by an appropriate firestop system. A firestop system is required to have been tested to CAN/ULC-S115-11, “Fire Tests of Fire Stop Systems”, and be in compliance with Subsection 3.1.9.

5.4 CLOSURES

Openings such as doorways or windows in a fire separation are required to have a fire-protection rating in accordance with **Table *5-1*** (as per Table 3.1.8.4.). The fire-resistance rating of door assemblies are to be based on the results of tests conducted in conformance with CAN/ULC-S104-15, “Standard Method for Fire Tests of Door Assemblies” and CAN/ULC-S106-15, “Standard Method for Fire Tests of Window and Glass Block Assemblies,” for windows. Smoke and fire dampers (where required) are to be installed in compliance with Articles 3.1.8.10. and 3.1.8.11.

Table 5-1: Fire-Protection Rated of Closures

Fire Resistance Rating of Fire Separation	Fire-Protection Rating of Closure
0-h	Smoke rated separation only
45-min	45 minutes
1-h	45 minutes

Fire Resistance Rating of Fire Separation	Fire-Protection Rating of Closure
1.5-h	1 hour
2-h	1.5 hour

As per Article 3.1.8.13., a self-closing device designed to return the door to the closed position after each use is required to be equipped on every door in a fire separation. Article 3.1.8.15. requires all doors in a fire separation have a positive latching mechanism designed to keep the door in the closed position after each use.

Fire dampers are required to be installed where a duct penetrates a fire separation required to have a fire-resistance rating. The duct is required to be equipped with a fire damper having a fire-protection rating equivalent to that of a closure outlined in **Table 5-1** above and meet the installation requirements addressed in Article 3.1.8.7. Fire dampers are permitted to be waived where ducts are located, designed and configured in accordance with Article 3.1.8.8.

Smoke dampers or a combination smoke/fire damper shall be installed in conformance with Article 3.1.8.11. in ducts or air-transfer openings that penetrate an assembly required to be a fire separation and where the fire separation: separates a public corridor, serves an assembly occupancy. Smoke dampers are permitted to be waived where ducts are located, designed and configured in accordance with Article 3.1.8.9. The ratings provided in **Table 5-1** above apply to both doors and fire dampers installed in ducts penetrating a fire separation.

As per Article 3.2.3.20. this requires certain provisions regarding the separation of two buildings connected by an underground walkway. In the existing configuration, the Turbine Hall and Pump House #1 has a connecting tunnel between each building. As per this Article, said areas are to be sprinklered, be of noncombustible construction, be provided with a fire separation with a fire resistance rating of 1 h on either side and is subjected to the acceptability of the AHJ. Refer to **Appendix F-35** and **Appendix F-35** for location and further information.

5.5 VERTICAL SHAFT RATINGS

Shafts within the Project areas are required to be constructed as fire separations having a fire-resistance rating (FRR) in accordance with **Table 5-2** below.

Table 5-2: Vertical Shaft Rating Requirements Overview

Shaft Type	Fire Resistance Rating of Fire Separation[1]	Fire Protection Rating of Closure(s)	NBC(AE) Reference
Exit (Stair & Corridor)	If = 1-h If = 2-h	45-min 1.5-h	Article 3.4.4.1.
Services (Vertical)	If = 1-h If = 2-h	45-min 1-hr	Article 3.6.3.1.
Elevator	If = 1-h If = 2-h	1-hr 2-hr	Article 3.5.3.1.

Notes: [1] As it is undetermined to what occupancy type and or configuration is proposed, nominal figures are provided for high-level understanding only.

5.6 PUBLIC CORRIDOR FIRE SEPARATIONS

As per Sentence 3.3.1.3.(8), if a floor area contains more than one suite, the suite is required to have an exterior exit doorway, or a doorway into a public corridor, or to an exterior passageway. Public corridors are to be fire separated as per the requirements of Article 3.3.1.4. Dependent on the proposed end use of the Switch House, this could be required here.

5.7 INTEGRITY OF EXITS

As per Article 3.4.4.4. fuel fired appliances are not permitted to be installed within an exit, and exits are not permitted to be used as a plenum for HVAC equipment.

Service spaces, service rooms, storage rooms, washrooms and similar ancillary rooms are not permitted to open directly into an exit and are to be provided with vestibules (i.e., 0-hr). Similarly, fuel-fired appliances are not permitted to be installed in an exit.

5.8 PROTECTION OF STANDPIPES NOT WITHIN EXITS

Standpipe risers and runs are required to be protected by a fire separation with an FRR rating equivalent to that required for exit enclosures within the building. This protection is typically achieved due to the risers being contained within an exit stair shaft. However, based on the application of NFPA 14–2013, 6.1.2.2., horizontal runs may also require this protection if any piping will be located outside of the exit enclosures throughout the building (refer to **Section 6.6** of this report for further information).

5.9 INTERIOR SURFACE FINISHES

As per Subsection 3.1.13. all interior finishes for the Project are required to have a Flame Spread Rating (FSR) not more than that required for the room or space in which it is located on not only the exposed material surface. Interior finishes are to have a flame spread rating (FSR) of not more than the ratings outlined in **Table 5-3** below when tested to CAN/ULC-S102-10 “Test for Surface Burning Characteristics of Building Materials and Assemblies”, or CAN/ULC-S102.2-10 “Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies”.

5.10 COMBUSTIBLE INTERIOR FINISHES IN NONCOMBUSTIBLE BUILDINGS

Table 5-3: Flame Spread Rating and Smoke Development Classification of Interior Finishes (Sprinklered)

Room, Space or Element	Maximum Flame Spread Rating			Smoke Development Classification
	Wall Finishes	Ceiling Finishes	Floor Finish	Wall, Ceiling and Flooring
Exits	25	25	-	-
Group A, Division 1[1]	150	150	-	-
Corridors, not within suites	150	25	-	-
Elevator Cars	75	75	-	450 for wall, ceiling and floor surfaces
Vertical Spaces	25	25	-	N/A
Skylights meeting Clause 3.1.5.4.(1)(a)	150	150	-	N/A
Skylights meeting Clause 3.1.5.4.(1)(b)	75	75	-	N/A

Notes:

[1] Including doors, skylights, glazing and light diffusers and lenses.

In addition to the requirements stated in **Section 5.9** of this report if the Subsection 3.2.2. Construction Article requires noncombustible construction, the following provisions are also applicable:

- Combustible interior finishes, including paint and wallpaper that do not exceed 1 mm thickness, are permitted in a building required to be of noncombustible construction (Sentence 3.1.5.12.(1)).
- Interior wall finishes, other than foamed plastics, are permitted to be combustible provided that they are not more than 25 mm thick and have a flame-spread rating not more than 150 on any exposed surface or surface that would be exposed by cutting through the material (Sentence 3.1.5.12.(2)).
- Interior ceiling finishes, other than foamed plastics, are permitted to be combustible provided that they are not more than 25 mm thick (except for exposed fire-retardant wood battens) and have a flame-spread rating not more than 25 on any exposed surface or on any surface that would be exposed by cutting through the material or be fire-retardant treated wood (Sentence 3.1.5.12.(3)). Combustible interior ceiling finishes may have a flame-spread rating up to 150 provided they do not exceed 10% of the ceiling area of the fire compartment.

+ Combustible millwork (e.g., mouldings, baseboard, doors and door frames, show windows together with their frames, aprons, backing, handrails, shelves, cabinets and counters) is permitted to be installed in buildings required to be of noncombustible construction.

Section 5.0 Overview

Many of the requirements indicated by **Section 5.0** would be applied during the design phase and installed during the construction phase, whilst at this time the information is provided to a high-level. The existing buildings had many non-compliant conditions pertaining to fire spread and fire stopping that would be explored further during the design phase.

6.0 Provisions for Firefighting & Suppression

6.1 FIRE DEPARTMENT ACCESS ROUTE

In accordance with Article 3.2.5.6., the existing Project site and buildings are required to be provided with an access route for fire department vehicles to the building face with the principal entrance refer **Appendix 0** of this report for further information and location. As per Article 3.2.5.5. the principal entrance is the fire department response point to all buildings and is required to be located between 3 m and 15 m from the curb of a fire department vehicle access route.

The following design requirements are required to be provided for the access route as per NBC(AE):

a) The access route is to be not less than 6 m in clear width and connected to a public thoroughfare;

b) The centreline turning radius not less than 12 m;

c) Dead end portions are not permitted to exceed 90 m unless a turnaround facility is provided (meeting the minimum turning radius noted above);

d) Have a gradient of not more than 1 in 12.5 over a minimum distance of 15 m;

e) Be designed to support the expected loads imposed by firefighting equipment (vehicles) and be capable of providing access in all weather conditions; and

f) Provided with not less than a 5 m overhead clearance along its entire length.

It is our understanding that the fire department access route for the Low-Pressure Power Plant will be provided via the main site entry road (refer to **Appendix A.2** of this report for further information). Further consideration for the following buildings are subsequently required:

+ Low-Pressure Power Plant – Access is required to be provided to each buildings' principal entrance. Refer to **Appendix A.2** of this report identifying where fencing is required to be removed, or further consideration towards firefighting access route into the Project is needed (, red circle).

Figure 6-1: Main Site Entrance Currently Locked with Fencing

- Low-Pressure Power Plant – A turnaround facility is required at the Low-Pressure Power plant as this exceeds 90m. Refer to **Appendix A.2** of this report and **Figure 6-2** for further information.

Figure 6-2: Main Site Entrance Requiring Turn-around Facilities

- Pump House's #1 & #2 exceed the distance from each buildings' principal entrance to an attending pumper truck, in addition, also exceeding the distance for fire fighter(s) to travel. Discussions with the AHJ and the Local Fire Department are to be considered as the Project moves forward to determine appropriate access for these buildings (refer **Figure 6-3** for further detail). It is noted that fire department access could be relaxed based on the end use and configuration of the building, however, in its current existing configuration this does not meet the requirements of the NBC(AE).

Figure 6-3: Photograph Looking Down Trail Towards Pump House #1 then #2 in the Distance

- ATCO Gas Building – Access is required to be provided to this building's principal entrance refer to **Appendix A.2** of this report and
- **Figure 6-4** where fencing is required to be removed, or consideration towards firefighting access route provide to this building.

Figure 6-4: ATCO Gas Building Located behind Locked Fencing

6.2 FIRE DEPARTMENT CONNECTION(S)

Fire department connections are required for the Low-Pressure Power Plant, Pump House #1 and Pump House #2. Fire department connections required for the buildings' standpipe systems are to be located not less than 3 m and not more than 15 m from the designated principal entrance to each building. Additionally, a fire hydrant is to be located not more than 45 m from fire department connections and the path to the fire hydrant must be unobstructed. See **Section 6.6** of this report for standpipe system requirements. In accordance with NFPA 14--2013, 6.4.5.2.1, each fire department connection is required to be designated by a sign identifying the connection service (e.g., "STANDPIPE").

6.3 HYDRANT(S)

As per Sentence 3.2.5.15.(1) the fire department connection for a standpipe system shall be located so that the distance from the fire department connection to a hydrant is not more than 45m and is unobstructed. Currently the location of the hydrant to the Low-Pressure Power Plant exceeds the 45 m requirements due being obstructed by fencing (refer to **Appendix A.2** of this report and **Figure 6-5** for further information). Additionally, the distance from this existing hydrant to Pump Houses #1 and #2 exceeds 45 m and requires further consideration and discussions with the AHJ and the Local Fire Department to determine the approach moving forward, as a hydrant system would be required by NBC(AE). The hydrant system for the ATCO Gas building is currently undetermined and awaiting a further site visit.

Figure 6-5: Hydrant Location to Project Site Behind Fencing

6.4 WATER SUPPLY

As the Low-Pressure Power Plant, Pump Houses #1 and #2 are either: greater than 600 m^2 or greater than 3 storeys in building height, a water supply is required for firefighting purposes as per the requirements of Article 3.2.5.7. It is understood a single hydrant is identified within **Appendix A.2** of this report, however, the distance from the hydrant to Pump Houses #1 and #2 exceeds that required by code (refer **Section 6.3** for further information).

6.5 FIRE PUMPS

In accordance with NBC(AE) Article 3.2.5.18., fire pumps are to be installed and tested in accordance with NFPA 20-2016 “Standard for the Installation of Stationary Pumps for Fire Protection”. The recommended fire-resistance rating for fire separations of fire pump rooms is 2h which is addressed in Table 4.13.1.1.2 (NFPA 20).

6.6 STANDPIPE AND HOSE SYSTEM

As per NBC(AE) Article 3.2.5.8., as the Low-Pressure Power Plant, Pump Houses #1 and #2 exceed three storeys in height, they are required to be provided with a standpipe system installed in accordance with Articles 3.2.5.9. to 3.2.5.12. and NFPA 14 - 2013 “Installation of Standpipe and Hose Systems” (Article 3.2.5.9.). See **Section 5.8** of this report regarding protection requirements for the standpipe riser and runs not within exit enclosures.

As per Article 3.2.5.10. and NFPA 14-2013, hose connections for the standpipe system are typically required to be provided within each exit, however, based on the unique configuration of this Project, dialogue with the AHJ and the Local Fire Department needs to be opened to discuss and agree a proposed pathway moving forward. Hose connections shall be designed in accordance with NFPA 14-2013 “Installation of Standpipe and Hose Systems”.

6.7 SPRINKLER SYSTEM

The Low-Pressure Power Plant, Pump Houses #1 and #2 are required to be sprinkler protected in accordance with NBC(AE) Articles 3.2.5.12. – 3.2.5.15. and 3.2.5.17. and NFPA 13-2013 “Installation of Sprinkler Systems”. A potential approach (subject to further review and discussion) is described within **Table 6-1**.

Table 6-1: Client Consideration for [Possible] Derogation – Omission/Rationalization of Sprinkler System

NBC(AE) Reference	Omission / Rationalisation
Article 3.2.5.12.	Efficacy of sprinkler protection at a height above the floor area is questionable and may be removed/rationalized without a detrimental impact on safety. Residual value is afforded through the building life cycle through maintenance and inaccessible locations. Subjected to further review and consideration from the client/design team.

6.8 FIRE EXTINGUISHERS

Portable fire extinguishers are to be provided and installed in conformance with the NFC(AE), refer **Section 8.1.10** of this report for further details.

Section 6.0 Overview

Subject to further discussions with the Fire Department, fire department access and active fire suppression systems could introduce some challenges and significant costings to all buildings (notwithstanding the ATCO Gas Building). There are many non-conforming situations within the existing buildings that are detailed above: fire department access to all building's, provision of an additional fire hydrant(s), sprinklers and standpipe system(s) would be required to be designed and installed, this would introduce considerations for the site's infrastructure.

7.0 Spatial Separation and Exposure Protection

7.1 SPATIAL SEPARATION CONSIDERATIONS OF ADJACENT BUILDINGS

Spatial separation between buildings on the same site and other properties is determined by assessing the limiting distance of the exterior walls (exposing building faces) of the building, and subsequently determining the permitted area of unprotected openings in each exterior wall. An unprotected opening is defined as a non-fire rated opening in a wall which could be a window or door, as well as any portion of an exterior wall assembly that does not have an FRR or an FRR less than that required.

The limiting distance is measured from the exposing building face to a property line or centre of a street. Tables 3.2.3.1.-D & 3.2.3.1.-E of the NBC(AE) provides the permitted quantity of unprotected openings for exterior walls given a limiting distance value and depending on the building occupancy and being sprinkler protected (note: should the buildings' approach a derogation to seek the omission of sprinkler system, this would require further analysis). Should the permitted unprotected openings be less than 100%, Table 3.2.3.7. prescribes the required FRR (and type of cladding required and construction) for the protected portion of the exterior wall, Sentence 3.2.3.10.(2) permits the exposing building face of a storey that faces a street and is at the same level as the street is permitted to have unlimited unprotected openings if the limiting distance is not less than 9 m.

The Project may contain Group A1, A2, D and/or E occupancies. Spatial separation calculations considering adjacent buildings are summarized in **Table 7-1** below (refer **Appendix 0** of this report for indicative spatial separation requirements and compartment references).

Table 7-1: Spatial Separation Requirements

Elevation	Available Limiting Distance	Percentage of Unprotected Openings Permitted	Size of Exposing Building Face	Actual Percentage of Unprotected Openings[#]	FRR Required	Type of Construction and Cladding Required[$]
Low Pressure Power Plant (If contains Group A1, A2 and D occupancies)						
North Elevation	> 9.0 m	100%	N/A	-	-	**Cladding** = Noncombustible
West Elevation	> 9.0 m	100%	N/A	-	-	**Cladding** = Noncombustible
East Elevation	6.45 m	58.3%*	292 m²	7.56%	45 min FRR	**Construction** = Noncombustible **Cladding** = Noncombustible
South Elevation	4.97 m	39.7%*	697 m²	12.06%	45 min FRR	
Low Pressure Power Plant (If contains Group E occupancy)						
North Elevation	14.40 m	95.2%*	701 m²	16.66%	1 h FRR	**Construction** = Noncombustible **Cladding** = Noncombustible
West Elevation	> 15.0 m	100%	N/A	-	-	**Cladding** = Noncombustible
East Elevation	6.45 m	24.7%*	292 m²	7.56%	2 h FRR	**Construction** = Noncombustible **Cladding** = Noncombustible
South Elevation	4.97 m	17.9%*	697 m²	12.06%	2 h FRR	**Construction** = Noncombustible **Cladding** = Noncombustible
Pump House #1						
North Elevation (A1, A2 & D)	4.97 m	61.7%*	74 m²	21.68%	45 min FRR	**Construction** = Noncombustible **Cladding** = Noncombustible

Elevation	Available Limiting Distance	Percentage of Unprotected Openings Permitted	Size of Exposing Building Face	Actual Percentage of Unprotected Openings[#]	FRR Required	Type of Construction and Cladding Required[$]
North Elevation (E)	4.97 m	31.5%*	74 m²	21.68%	45 min FRR	**Construction** = Noncombustible **Cladding** = Noncombustible
West Elevation	> 15.0 m	100%	N/A	-	-	**Cladding** = Noncombustible
East Elevation	> 15.0 m	100%	N/A	-	-	**Cladding** = Noncombustible
South Elevation	> 15.0 m	100%	N/A	-	-	**Cladding** = Noncombustible
Pump House #2						
All Elevations (A1, A2, D or E)	> 15.0 m	100%	N/A	-	-	**Cladding** = Noncombustible
ATCO Gas Building						
All Elevations (A1, A2, D or E)	> 15.0 m	100%	N/A	-	-	**Cladding** = Noncombustible

Notes: * Based on Linear Interpolation of the measured (actual) limiting distance.

[$] Subject to the requirements of NBC(AE) 3.1.5.

[#] The existing configuration of unprotected openings within the existing buildings' have a percentage lower than required by Code without triggering additional protection to those unprotected openings. The construction, however, where **Table 7-1** details "FRR Required" the internal wall is to achieve the fire resistance rating listed to not less than the percentage area provided.

7.2 PROTECTION OF EXIT FACILITIES

There are instances where the plane of the exterior wall of the exit enclosure forms an angle less than 135° with the plane of an exterior wall of the building it serves, the opening in the exterior wall exposing fire to the egress route is to be sufficiently protected to provide fire rated protection to occupants evacuating within 3.0 m horizontally of unprotected openings.

In case of fire exposure to an exit, as described in Article 3.2.3.13., unprotected openings are to be protected by:

- Glass block conforming to the requirements of Article 3.1.8.14.;
- A wired glass assembly conforming to D-2.3.14. in Appendix D of the NBC(AE);
- A closure conforming to the requirements of Subsection 3.1.8., and Articles 3.2.3.1. and 3.2.3.14, or alternatively
- Window sprinkler in the form of an Alternative Solution.

There are exit exposure conditions within the Project site area. Refer to **Figure 7-1** and **Figure 7-2** and **Appendix 0** of this report for examples.

Figure 7-1: Example of Exit Exposure Issues – Boiler Hall (Red Circles)

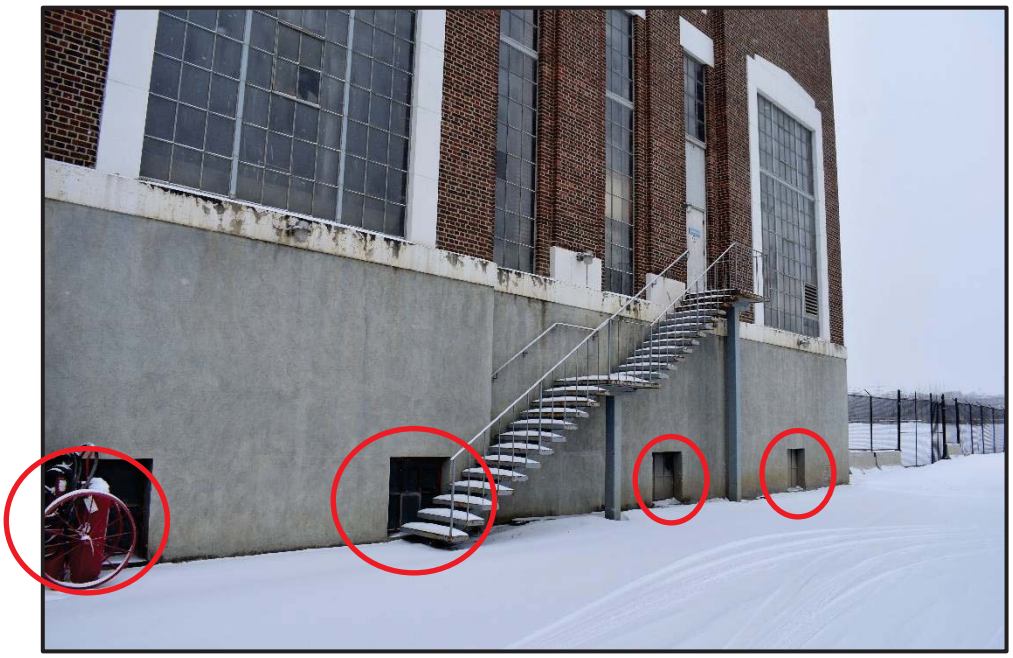


Figure 7-2: Example of Exit Exposure Issues – Switch House (Red Circles)

Section 7.0 Overview

The project contains some buildings where minor interior alterations/modifications to increase the buildings resilience for fire separations providing a fire-resistance rating might be required in order to achieve sufficient protection against external spread of fire to neighbouring buildings and/or properties. This includes the protection to exiting facilities where occupants evacuating from the project buildings pass by other fire rated compartments.

8.0 Fire Alarm and Detection System

A high-level summary of the major requirements relating to the Project buildings fire alarm system(s), fire detection devices and suppression requirements applicable to the Project is provided in the following subsections. Fire Alarm and Detection Systems are to be installed and conform with NBC(AE) Subsection 3.2.4.

8.1 FIRE ALARM SYSTEM

8.1.1 Determination of Requirement of a Fire Alarm System

As per Sentence 3.2.4.1.(1), a fire alarm system is to be installed if the building is provided with an automatic sprinkler system.

Table 8-1: Determination of Fire Alarm System

Building Feature	Low Pressure Power-Plant	Pump House #1	Pump House #2	ATCO Gas Building
Sprinkler System	Required - system is to comply with NFPA 13-2013#	Required - system is to comply with NFPA 13-2013	Required - system is to comply with NFPA 13-2013	N/A
Standpipe System	Required - system is to comply with NFPA 14-2013	Required - system is to comply with NFPA 14-2013	Required - system is to comply with NFPA 14-2013	N/A
Fire Alarm and Detection System	Required - system is to comply with CAN/ULC-S524-14	Required - system is to comply with CAN/ULC-S524-14	Required - system is to comply with CAN/ULC-S524-14	Not Required (unless occupant load = > 150 persons as per Article 3.2.4.1.) If daycare other provisions apply.

8.1.2 Installation and Verification

The fire alarm system (where/as required by **Table 8-1**) is to be designed and installed in accordance with CAN/ULC-S524-14 “Installation of Fire Alarm Systems” and verified in conformance with CAN/ULC-S537-13 “Verification of Fire Alarm Systems” to ensure the system(s) are operating correctly throughout both buildings. Clause 3.2.4.3.(1)(d) permits a fire alarm system to be either a single or 2-stage system.

As per Article 3.2.9.1., all life safety systems installed within the building which are integrated with other systems are required to be commissioned as a whole to ensure the correct operation and inter-relationships between the systems.

8.1.3 Signals to the Fire Department

Where a fire alarm system is installed, this is to be remotely monitored by a ULC listed monitoring station in conformance with Article 3.2.4.7.

8.1.4 Annunciator

The annunciator for fire alarm system(s) is to be installed at the principal entrance of each building (Low Pressure Power-Plant, Pump House’s #1 and #2) and conform with Article 3.2.4.8.

8.1.5 Elevator Emergency Return

As per Sentence 3.5.2.1.(1) The design, construction, installation and alteration of every elevator, passenger-elevating device and freight platform lift is to conform to the Elevating Devices Codes Regulation made pursuant to the Safety Codes Act. If elevators are to be provided within the Low-Pressure Power-Plant, Pump House’s #1 and #2 and if required by Appendix E of ASMEA 17.1/CSA B44-13, elevator emergency return might be required.

8.1.6 Audible and Visual Signals

Where a fire alarm system is installed, audible signal devices are required to be installed within floor areas in accordance with the requirements of Article 3.2.4.18.

Visual signal devices are to be installed within buildings provided with a fire alarm system where required by Article 3.2.4.19. and CAN/ULC-S526-16 which is referenced by CAN/ULC-S524-14.

8.1.7 Fire & Smoke Detectors

For the Project, where required, fire detectors are to conform with Article 3.2.4.10. and smoke detectors are to conform to Article 3.2.4.11.

8.1.8 Manual Stations

As per Article 3.2.4.16. manual stations are to be installed within buildings provided with a fire alarm system and are required to be provided adjacent to every exit from each floor of each building, and also adjacent to the principal entrances to each building.

8.1.9 Carbon Monoxide Alarms

Carbon monoxide (CO) alarms are to be provided where required by Subsection 6.9.3.

8.1.10 Fire Extinguishers

Portable fire extinguishers are required to be located throughout the Project buildings in accordance with NFC(AE) Subsection 2.1.5. of Division B and NFPA 10-2013 and except for portable extinguishers located in floor areas of service areas are required to be installed in cabinets that are not lockable, obscured or obstructed, and having a door that is either glazed, or painted red and clearly marked with the words “FIRE EXTINGUISHER” with white letters not less than 100 mm high and with 12 mm strokes.

Section 8.0 Overview

All buildings are noncompliant with **Section 8.0**. The provision of a fire alarm system would require to be installed in most or all buildings (as required) and would introduce costings to the project.

9.0 General Lighting, Emergency Lighting and Emergency Power

9.1 MINIMUM ILLUMINATION

9.1.1 General Lighting

As per Article 3.2.7.1., an average level of illumination of not less than 50 lx measured at floor or tread level is required for all exits, public corridors or a corridor providing access to exit for the public throughout the buildings. The minimum level of illumination in any of these areas is not permitted to be less than 10 lx.

9.1.2 Emergency Lighting

As per Article 3.2.7.3., emergency lighting is to provide average levels of at least 10 lx at floor or tread levels locations prescribed in Sentence 3.2.7.3.(1). The minimum value of illumination for emergency lighting is required to be not less than 1 lx.

Emergency power for lighting is required to be provided by either a generator or batteries. If self-contained emergency lighting units are used, they must conform with CSA C22.2 No. 141-10 “Emergency Lighting Equipment”. Emergency lighting is required to be designed to automatically activate when normal lighting conditions are interrupted.

9.2 EMERGENCY POWER SUPPLIES

9.2.1 Installation

As per Article 3.2.7.5. the emergency power system is to be installed in conformance with CSA-C282-15, "Emergency Electrical Power Supply for Buildings".

9.2.2 Emergency Lighting

As per Article 3.2.7.4. the emergency power supply for emergency lighting is required to be provided for a duration of not less than 30 minutes.

9.2.3 Fire Alarm System

As per Article 3.2.7.8. emergency power supply for the fire alarm system is required to be capable of providing supervisory power for not less than 24 hours, and immediately following that period, power to operate under full load for not less than 30 minutes.

9.3 EXIT SIGNS

If Exit signs are required as per Sentence 3.4.5.1.(1) to be provided they are required to be in conformance with Article 3.4.5.1. Additional directional exit signs may be required as necessary in accordance with Article 3.4.5.1. The exit signs to be used are required to comply with ISO 3864-1 and ISO 7010, which are the type of exit sign commonly referred to as “pictogram” signs.

Section 9.0 Overview

All buildings are noncompliant with **Section 9.0**. The provision of lighting, emergency lighting, emergency power supplies and exit signage would be required to be installed in all buildings (as required) and would introduce costings to the project.

10.0 Interconnected Floor Spaces & Mezzanines

10.1 MEZZANINES AND INTERCONNECTED FLOOR SPACE REQUIREMENTS

As per the requirements of Clause 3.2.1.1.(3)(a), the aggregate area of the mezzanine floor level located within the Low-Pressure Power Plant, Boiler Hall does not exceed 40% (area calculation of Mezzanine Percentage = (798.509 / 2,278.405) * 100 = 35.04%) of the open area of the room in which it is located. As per the requirements of Clause 3.2.1.1.(3)(b) the space above the mezzanine is used as an open area without partitions or subdividing walls higher than 1070 mm above the finished floor level. However, as the mezzanine floor area is greater than that required by Subclause 3.2.8.2.(1)(c)(i) (i.e. 500 m²) measured at 799 m², this would subsequently be required by code to be treated as a floor level, therefore contributing as an additional storey to the building (i.e. 3 storeys total) unless a Group A, Division 1 occupancy (Clause 3.2.8.2.(1)(a)) is provided (in which this would be only classified as 2 storey). In the case of being used as another occupancy (i.e. other than Group A, Division 1) this will be treated as a floor level (i.e. storey) as either: a part of the interconnected floor space or alternatively, fully enclose the floor within fire separations providing a fire resistance rating to subsequently avoid the requirement of triggering the interconnected floor space requirement as detailed below.

It is assumed that the configuration of the existing buildings is to be [mostly] retained, therefore the following buildings would be required to be designed with an interconnected floor space. Furthermore, as the interconnected floor space does not meet the requirements of Sentence 3.2.8.2.(6) (i.e. greater than one storey above or below), it must be protected in conformance with Articles 3.2.8.3 to 3.2.8.9.

The following buildings are identified with an interconnected floor space: Boiler/Turbine Halls, Pump House #1 and Pump House #2. These buildings would need to be designed in accordance with the following:

- Article 3.2.8.3. requires the building(s) to be sprinklered throughout and the building will be sprinklers as per the applicable Subsection 3.2.2 requirements.
- Article 3.2.8.4. exit(s) opening into the interconnected floor space are to be protected at each opening by vestibules conforming to the following requirements:
    - Door(s) shall be located not less than 1.8 m apart.
    - The vestibule shall be separated from the remainder of the floor area by a 0 h (unrated) fire separation.
    - The vestibule shall be provided with ventilation designed to maintain an internal air pressure 12 Pa greater than that of the adjacent floor area.
    - The elevator shafts need not be protected by vestibules as they do not serve floors other than the interconnected floor space.
- Article 3.2.8.5. where a protected floor space is used to satisfy the requirements of Clause 3.4.3.2.(6)(b), Article 3.2.8.5. is to be conformed to.
- Article 3.2.8.6. requires 500 mm deep draft stops (measure from the ceiling/underside of floor slab down) are required to be provided at each floor level of the interconnected floor space immediately adjacent to any openings.
- Article 3.2.8.7. a mechanical exhaust system shall be provided to remove air from the interconnected floor space at a rate of four air changes per hour. This system shall be actuated by a switch located near to the annunciator panel and need not be provided with emergency power.
- Article 3.2.8.8. as the interconnected floor space has a ceiling height greater than 8 m, Sentence 3.2.8.9.(1) requires combustible content to be limited to 16 g of combustible material for each cubic metre of volume of the interconnected floor space.

Table 10-1: Client Consideration for [Possible] Rationalization of IFS

NBC(AE) Reference	Possible Omission / Rationalisation
Article 3.2.8.3.	**Sprinklers omission from tall ceilings** - Efficacy of sprinkler protection at a height above the floor area is questionable and may be removed without a detrimental impact on safety. Residual value is afforded through the building life cycle through maintenance and inaccessible locations.

NBC(AE) Reference	Possible Omission / Rationalisation
Article 3.2.8.4.	**Rationalisation of egress components** – protection, number, location and separation of vertical & horizontal exit components can be minimized / reduced in conjunction with the ventilation analysis such that means of escape is proportionate to the level of anticipated risk. **Vestibules & pressurization omission** – protection to the stair cores may be omitted through the design of an effective smoke ventilation system. It can be demonstrated that smoke ingress beyond a nominal value into a stair will be prevented through the forced convection imposed upon the smoke plume by the ventilation system.
Article 3.2.8.4.	**Protected floor space(s) omission** – The maintenance of tenable conditions through smoke ventilation can omit the requirement to provide fire separations on floor areas to protect building occupants.
Article 3.2.8.6.	**Draft stops omitted** - Draft stops around voids / openings can be omitted, reduced or rationalised in order to meet strategic design aspirations.
Article 3.2.8.8.	**Combustible content limits** – The prescriptive expectation of limiting the fire load within the interconnected floor space to 16 g/m³of combustible material can potentially be omitted. The fire loading within the general floor plate will be assessed in relation to possible and credible fire scenarios such that the smoke production can be estimated and extracted by the smoke ventilation system.

Section 10.0 Overview

The Low-Pressure Power Plant, Turbine and Boiler Halls, and Pumphouses 1 & 2 may require the design of an interconnected floor space that would be triggered by the change of occupancy to these buildings. The provision of interconnected floor space requirements would introduce significant challenges and costings to the overall project as none are currently provided.

11.0 Safety within Floor Areas

11.1 OCCUPANT LOAD

The Project is subject to the following occupant load calculation requirements outlined in Subsection 3.1.17. **Table 11-1** below provides a summary of the calculated number of occupants (total) for each building and includes for the various occupancy types detailed within this report. Depending on the design, occupant loads will potentially vary and will require re-confirmation as the design progress.

Table 11-1: Occupant Load [Conceptual] Analysis

Occupant Classification	Area (m^2)	Occupant Load Factor	Use of Space	Total Calculated Occupant Load (persons)*
Low Pressure Power Plant – Turbine Hall				
Basement Level				
Group A1	1662	0.75	Performing Arts Space (stages for theatrical performances and non-fixed seats)	2216
Group A2	1662	0.95	Assembly Space (non-fixed seats and tables)	1749
Group D	1662	9.3	Commercial Space (offices)	179
Group E	1662	3.7	Mercantile Space (basements and first storeys)	449
Ground Floor				
Group A1	1069	0.75	Performing Arts Space (stages for theatrical performances and non-fixed seats)	1425
Group A2	1069	0.95	Assembly Space (non-fixed seats and tables)	1125
Group D	1069	9.3	Commercial Space (offices)	115
Group E	1069	3.7	Mercantile Space (basements and first storeys)	289
Low Pressure Power Plant – Switch House				
Basement Level				
Group A1	432	0.75	Performing Arts Space (stages for theatrical performances and non-fixed seats)	576
Group A2	432	0.95	Assembly Space (non-fixed seats and tables)	455
Group D	432	9.3	Commercial Space (offices)	46
Group E	432	3.7	Mercantile Space (basements and first storeys)	117
Ground Floor				
Group A1	304	0.75	Performing Arts Space (stages for theatrical performances and non-fixed seats)	405
Group A2	304	0.95	Assembly Space (non-fixed seats and tables)	320
Group D	304	9.3	Commercial Space (offices)	33
Group E	304	3.7	Mercantile Space (basements and first storeys)	82
First Floor				
Group A1	450	0.75	Performing Arts Space (stages for theatrical performances and non-fixed seats)	600
Group A2	450	0.95	Assembly Space (non-fixed seats and tables)	474
Group D	450	9.3	Commercial Space (offices)	48
Group E	450	3.7	Mercantile Space (basements and first storeys)	122
Low Pressure Power Plant – Boiler Hall				
Basement Level				
Group A1	1795	0.75	Performing Arts Space (stages for theatrical performances and non-fixed seats)	2393

Occupant Classification	Area (m^2)	Occupant Load Factor	Use of Space	Total Calculated Occupant Load (persons)*
Group A2	1795	0.95	Assembly Space (non-fixed seats and tables)	1889
Group D	1795	9.3	Commercial Space (offices)	193
Group E	1795	3.7	Mercantile Space (basements and first storeys)	485
Ground Level				
Group A1	2023	0.75	Performing Arts Space (stages for theatrical performances and non-fixed seats)	2697
Group A2	2023	0.95	Assembly Space (non-fixed seats and tables)	2129
Group D	2023	9.3	Commercial Space (offices)	218
Group E	2023	3.7	Mercantile Space (basements and first storeys)	547
Mezzanine Floor				
Group A1	799	0.75	Performing Arts Space (stages for theatrical performances and non-fixed seats)	1065
Group A2	799	0.95	Assembly Space (non-fixed seats and tables)	841
Group D	799	9.3	Commercial Space (offices)	86
Group E	799	3.7	Mercantile Space (basements and first storeys)	216
Pump House 1				
Floor Level: Main-Lower 4 (Combined)				
Group A1	318	0.75	Performing Arts Space (stages for theatrical performances and non-fixed seats)	424
Group A2	318	0.95	Assembly Space (non-fixed seats and tables)	335
Group D	318	9.3	Commercial Space (offices)	34
Group E	318	3.7	Mercantile Space (basements and first storeys)	86
Roof Level				
Group A1	153	0.75	Performing Arts Space (stages for theatrical performances and non-fixed seats)	204
Group A2	153	0.95	Assembly Space (non-fixed seats and tables)	161
Group D	153	9.3	Commercial Space (offices)	16
Group E	153	3.7	Mercantile Space (basements and first storeys)	41
Pump House 2				
Floor Level: Main-Lower 5 (Combined)				
Group A1	1111	0.75	Performing Arts Space (stages for theatrical performances and non-fixed seats)	1481
Group A2	1111	0.95	Assembly Space (non-fixed seats and tables)	1169
Group D	1111	9.3	Commercial Space (offices)	119
Group E	1111	3.7	Mercantile Space (basements and first storeys)	300
Terrace Level				
Group A1	271	0.75	Performing Arts Space (stages for theatrical performances and non-fixed seats)	361
Group A2	271	0.95	Assembly Space (non-fixed seats and tables)	285
Group D	271	9.3	Commercial Space (offices)	29
Group E	271	3.7	Mercantile Space (basements and first storeys)	73
Roof Level				
Group A1	107	0.75	Performing Arts Space (stages for theatrical performances and non-fixed seats)	143
Group A2	107	0.95	Assembly Space (non-fixed seats and tables)	113
Group D	107	9.3	Commercial Space (offices)	12

Occupant Classification	Area (m^2)	Occupant Load Factor	Use of Space	Total Calculated Occupant Load (persons)*
Group E	107	3.7	Mercantile Space (basements and first storeys)	29
ATCO Gas House				
ATCO Gas House Main Level				
Group A1	73	0.75	Performing Arts Space (stages for theatrical performances and non-fixed seats)	97
Group A2	73	0.95	Assembly Space (non-fixed seats and tables)	77
Group D	73	9.3	Commercial Space (offices)	8
Group E	73	3.7	Mercantile Space (basements and first storeys)	20

Notes: * Occupant(s) are calculated per occupancy type for high-level understanding on what occupancy loads could be reflected within the Project buildings.

11.2 CORRIDORS

As per NBC(AE) Sentence 3.3.1.9.(1) the minimum width of a corridor shall be 1,100mm.

11.3 DOORS AND DOOR HARDWARE

Door and door hardware shall conform with the requirements of NBC(AE) Article 3.3.1.13. Refer **Section 12.9.1** of this report for door width requirements.

As per Sentence 3.3.4.3.(1), a door equipped with a latching mechanism in an access to exit from a room or suite of assembly occupancy containing an occupant load more than 100 occupants is to be equipped with a device that will release the latch and allow the door to swing wide open when a force not more 38 N for exterior swing door and 22 N for interior swinging door than is applied to the device in the direction of travel to the exit.

Section 11.0 Overview

Many of the requirements indicated by **Section 11.0** would be applied during both the design and construction phases, whilst at this time the information is provided to a high-level, the existing buildings had many non-compliant conditions pertaining to doors and door hardware.

12.0 Egress and Exiting Requirements

12.1 MEANS OF EGRESS

Access to exits within floor areas are required to conform to Article 3.3.1.3. As the buildings (apart from ATCO Gas House) are required to be fully sprinklered, a room or a suite with a single means of egress is permitted provided that the occupant load of the room or suite is not more than 60 persons, the travel distance from anywhere in the room or suite to the egress doorway does not exceed 25 m, and the area of the room or suite does not exceed the value indicated in **Table 12-1** below based on occupancy type:

Table 12-1: Maximum Area of Room or Space Permitting a Single Egress Door (Sprinklered)

Occupancy of Room or Suite	Maximum Area (m^2)
Group A, Division 1 & 2	200
Group D	300
Group E	200

Access to exits within floor areas are required to conform to Article 3.3.1.3. As the ATCO Gas House is not required to be fully sprinklered, a room or a suite with a single means of egress is permitted provided that the occupant load of the room or suite is not more than 60 persons, the travel distance from anywhere in the room or suite and the area of the room or suite does not exceed the value indicated in **Table 12-4** below based on occupancy type:

Table 12-2: Maximum Area of Room & Travel Distance Permitting a Single Egress Door (Non Sprinklered)

Occupancy of Room or Suite	Maximum Area (m^2)	Maximum Travel Distance to Egress Doorway (m)
Group A, Division 1 & 2	150	15
Group D	200	25
Group E	150	15

As per Sentence 3.3.1.3.(8), each suite in a floor area that contains more than one suite is to have an exterior exit doorway, or a doorway into a public corridor, or to an exterior passageway.

As per Sentence 3.3.1.5.(2) where two egress doorways are required, they shall be placed at a distance from one another equal to or greater than one third of the maximum overall diagonal dimension of the area to be served, measured as the shortest distance that smoke would have to travel between the nearest required egress doors.

12.2 EGRESS DOOR SWING

Doors within a corridor, and doors opening onto a corridor or other facility providing a means of egress from a room or suite with an intended occupant load exceeding 60 are required to swing in the direction of exit travel, Sentence 3.3.1.11.(2)).

12.3 DEAD-END CORRIDORS

Public corridors are not permitted to have dead-end portions exceeding 6 m in length as per Sentence 3.3.1.9.(7).

12.4 HEADROOM CLEARANCE

As per Article 3.3.1.8. headroom clearance in every access to exit is required to be not less than 2,050 mm over the required width of the exit, including stairs which are measured from a straight-line drawn tangent through the edge of nosing's. Doorways are permitted a headroom clearance of not less than 2,030 mm with door closers or other devices permitted to reduce the clear height of the doorway to not less than 1,980 mm.

12.5 MINIMUM NUMBER OF LOCATION OF EXITS

As per Article 3.4.2.3., all floor areas are required to be served by at least two exits unless permitted by Article 3.4.2.1. (i.e. ATCO Gas House could be served by a single exit). At least two exits are required to be separated by a minimum distance of not less than half the maximum diagonal dimension of the floor level but not less than 9 m as per Clause 3.4.2.3.(1)(b).. The

distance is to be measured considering the path smoke would travel from one exit to the other, where smoke would not penetrate an intervening fire separation. Where a public corridor is provided as access to the exits on a floor level, the distance between the exits serving that public corridor need not be more than 9 m regardless of the diagonal measurement of that floor area.

12.6 TRAVEL DISTANCE

As per Article 3.4.2.5. travel distances to an exit are required to be within 45 m [sprinklered building] or 30 m [non sprinklered building]. Travel distances within the existing Project exceed this requirement, this is visually summarized within **Appendix 0** and **Section 12.7** of this report which provides a high-level summary on number and exiting width requirements of exits. At this stage in the Project, it needs to be determined if the client wishes to proceed on the basis of a prescriptive approach where additional exits would be required, or if an alternative solution approach to rationalize exits is to be explored under a performance-based design (refer **Table 12-3** for further information).

Table 12-3: Client Consideration for [Possible] Derogation –Rationalization of Egress Components

NBC(AE) Reference	Omission / Rationalisation
Article 3.4.2.5.	**Rationalisation of egress components** – protection, number, location and separation of vertical & horizontal exit components can be minimized / reduced in conjunction with the ventilation analysis such that means of escape is proportionate to the level of anticipated risk.

12.7 EXIT CAPACITY

Occupant load calculations estimate the maximum number of people expected within a floor area and are typically based on the appropriate factors outlined in Table 3.1.17.1. Occupant loads are permitted to exceed these factors or be limited by way of posting the maximum design occupant load by usage of permanent signage in a conspicuous location on the floor. Additionally, in accordance with the NFC(AE), which will apply when the building comes into operation, the occupant loads may be limited to an 'operational occupant load'. The occupant load of a storey must not exceed the exit capacity of the exits serving that storey.

The exit capacity of a storey is based on the most restrictive exiting elements serving that storey (exit doors or stairs), utilizing either 6.1 mm/person for doorways, 8 mm/person for stairs (consisting of steps whose rise is not more than 180 mm and whose run is not less than 280 mm), or 9.2mm/person for stairs, not conforming to 8 mm/person requirements.

Occupant loads on a floor by floor and occupant type basis are summarized in)**Table 12-4** through **Table 12-9** below. Note, due to existing site conditions, exiting widths could not be fully taken for all exits [due to being chained closed and safety concerns] therefore the below tables provide a minimum exiting width for the calculated range of occupant loading. Once an occupancy for the buildings is understood, further information pertaining to locations and numbers of exits can be provided.

Table 12-4: Occupant Load Analysis vs. Exiting Provisions (Boiler Hall)

Calculated Occupant Load	No. of Calculated Occupants	No. of Exits Required*	Horizontal Exiting Width Required (mm)#	Vertical Exiting Width Required (mm)$	Existing Exiting Width Occupant Capacity[1]	Exiting Capacity Difference
Basement Floor Level						
Group A1	2393	2	14599	19147	[2]	TBD[2]
Group A2	1889	2	11526	15116	[2]	TBD[2]
Group D	193	2	1177	1544	[2]	TBD[2]
Group E	485	2	2959	3881	[2]	TBD[2]
Main Floor Level						
Group A1	2697	2	16454	21579	1180[3]	-3348[3]
Group A2	2129	2	12990	17036		-2395[3]
Group D	218	2	1327	1740		+815[3]
Group E	547	2	3335	4374		+262[3]

Calculated Occupant Load	No. of Calculated Occupants	No. of Exits Required*	Horizontal Exiting Width Required (mm)#	Vertical Exiting Width Required (mm)$	Existing Exiting Width Occupant Capacity[1]	Exiting Capacity Difference
Mezzanine Floor Level						
Group A1	1065	2	6499	8523	[2]	TBD[2]
Group A2	841	2	5130	6728	[2]	TBD[2]
Group D	86	2	850	1100	[2]	TBD[2]
Group E	216	2	1317	1728	[2]	TBD[2]

Table 12-5: Occupant Load Analysis vs. Exiting Provisions (Turbine Hall)

Calculated Occupant Load	No. of Calculated Occupants	No. of Exits Required*	Horizontal Exiting Width Required (mm)#	Vertical Exiting Width Required (mm)$	Existing Exiting Width Occupant Capacity[1]	Exiting Capacity Difference
Basement Floor Level						
Group A1	2216	2	13518	17728	[2]	TBD[2]
Group A2	1749	2	10672	13996	[2]	TBD[2]
Group D	179	2	1090	1430	[2]	TBD[2]
Group E	449	2	2740	3594	[2]	TBD[2]
Main Floor Level						
Group A1	1425	2	8695	11403	1180[3]	-3348[3]
Group A2	1125	2	6864	9002		-2395[3]
Group D	115	2	850	1100		+815[3]
Group E	289	2	1762	2311		+262[3]

Table 12-6: Occupant Load Analysis vs. Exiting Provisions (Switch House)

Calculated Occupant Load	No. of Calculated Occupants	No. of Exits Required*	Horizontal Exiting Width Required (mm)#	Vertical Exiting Width Required (mm)$	Existing Exiting Width Occupant Capacity[1]	Exiting Capacity Difference
Basement Floor Level						
Group A1	576	2	3514	4608	286[4]	-290
Group A2	455	2	2774	3638		-169
Group D	46	2	850	1100		+239
Group E	117	2	850	1100		+169
Main Floor Level						
Group A1	405	2	2473	3243	277[4]	-128
Group A2	320	2	1952	2560		-43
Group D	33	2	850	1100		+245
Group E	82	2	850	1100		+195
First Floor Level						
Group A1	600	2	3660	4800	257[4]	-343
Group A2	474	2	2889	3789		-216
Group D	48	2	850	1100		+209
Group E	122	2	850	1100		+136

Table 12-7: Occupant Load Analysis vs. Exiting Provisions (Pump House #1)

Calculated Occupant Load	No. of Calculated Occupants	No. of Exits Required*	Horizontal Exiting Width Required (mm)#	Vertical Exiting Width Required (mm)$	Existing Exiting Width Occupant Capacity[1]	Exiting Capacity Difference
Combined Floor Level (Exiting Required Overall)						
Group A1	424	2	2586	3392	TBD[2]	TBD[2]
Group A2	335	2	2042	2678	TBD[2]	TBD[2]
Group D	34	2	850	1100	TBD[2]	TBD[2]
Group E	86	2	850	1100	TBD[2]	TBD[2]
Roof Level						
Group A1	204	2	1250	1650	TBD[2]	TBD[2]
Group A2	161	2	985	1300	TBD[2]	TBD[2]
Group D	16	1	850	900	TBD[2]	TBD[2]
Group E	41	1	850	900	TBD[2]	TBD[2]

Table 12-8: Occupant Load Analysis vs. Exiting Provisions (Pump House #2)

Calculated Occupant Load	No. of Calculated Occupants	No. of Exits Required*	Horizontal Exiting Width Required (mm)#	Vertical Exiting Width Required (mm)$	Existing Exiting Width Occupant Capacity[1]	Exiting Capacity Difference
Combined Floor Level (Exiting Required Overall)						
Group A1	1481	2	9036	11851	TBD[2]	TBD[2]
Group A2	1169	2	7134	9356	TBD[2]	TBD[2]
Group D	119	2	850	110	TBD[2]	TBD[2]
Group E	300	2	1832	2402	TBD[2]	TBD[2]
Terrace Level						
Group A1	361	2	2205	2900	TBD[2]	TBD[2]
Group A2	285	2	1740	1450	TBD[2]	TBD[2]
Group D	29	1	850	900	TBD[2]	TBD[2]
Group E	73	2	850	900	TBD[2]	TBD[2]
Roof Level						
Group A1	143	2	875	1150	TBD[2]	TBD[2]
Group A2	113	2	850	900	TBD[2]	TBD[2]
Group D	12	1	850	900	TBD[2]	TBD[2]
Group E	29	1	850	900	TBD[2]	TBD[2]

Table 12-9: Occupant Load Analysis vs. Exiting Provisions (ATCO Gas Building)

Calculated Occupant Load	No. of Calculated Occupants	No. of Exits Required*	Horizontal Exiting Width Required (mm)#	Vertical Exiting Width Required (mm)$	Existing Exiting Width Occupant Capacity[1]	Exiting Capacity Difference
Main Floor Level (Exiting Required Overall)						
Group A1	97	2	850	N/A	262	+165
Group A2	77	2	850	N/A	262	+185
Group D	8	1	850	N/A	262	+254
Group E	20	1	850	N/A	262	+243

Notes:

* As per Article 3.4.2.1. this states the minimum number of exits only, as per Article 3.4.2.5. travel distances are required to be within 45 m [sprinklered building] or 30 m [non sprinklered building], therefore additional exits may be required and is subject to preferred approach by client (i.e. if **Table 10-1** is to be explored further).

[#] As per Clause 3.4.3.2.(1)(a), 6.1 mm per person is used for doorways and corridors (i.e. horizontal).

[$] As per Clause 3.4.3.2.(1)(b) 8 mm per person is assumed and used for a stair consisting of steps (i.e. vertical) whose rise is not more than 180mm and whose run is not less than 280mm, where existing conditions do not achieve this 9.2 mm per person is used.

[1] The existing exiting width measurement is provided as an approximation only as the exiting door(s) during the site visit were either locked or padlocked closed. The measurements are taken from the Architectural documentation and therefore might be typically larger than the final installed doorway or stairway (subject to further review).

[2] There are non-compliant horizontal and/or vertical exits observed at the time of site review, therefore, there are no exiting provisions from the space in question that would support an occupancy. Compliant horizontal and vertical exiting facilities are required to be explored further.

[3] Based on current design, exit openings and/or stair widths for the entire low pressure power plant (i.e. Switch House, Turbine Hall and Boiler Hall), including areas where exits require stairs to be added (removed at time of review) is considered that such stairs will be incorporated/reinstated into the design as it progresses and dependent on their width, this could impact overall exiting width further. Doors that do not achieve exiting width minimum have been excluded from this calculation.

[4] Exiting configurations is non-compliant and would need further review/design to bring up to compliance, therefore, calculations are provided on the basis of specific upgrades being conducted.

12.8 EXISTING EXITS

The below snapshots provide a high-level overview to a sample of exits where attention and modification is required in order to meet the requirements of **Section 12.9.**

Figure 12-1: Example of Exit Discharge (Exit D4) Non-Compliant with Exit Exposure Concerns

Figure 12-2: Example of Exit Discharge (Exit D7) in Non-Compliant and Unusable Condition (no stairs provided also)

Figure 12-3: Example of Exit Discharge (Exit D9) in Poor Condition and Non-Compliant

Figure 12-4: Example of Exit Discharge (Exit D6) in Non-Compliant and Unusable Condition (no stairs provided also)

Figure 12-5: Example of Exit Discharge (Exit D8) in Non-Compliant and Unusable Condition

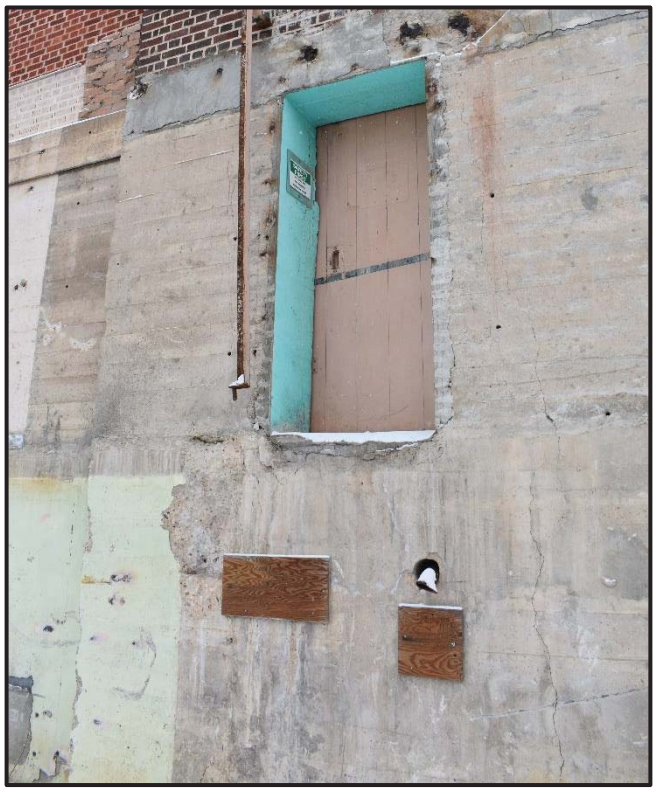


Figure 12-6: Typical Example of Exiting from the Basement in Non-Compliant and Unusable Condition

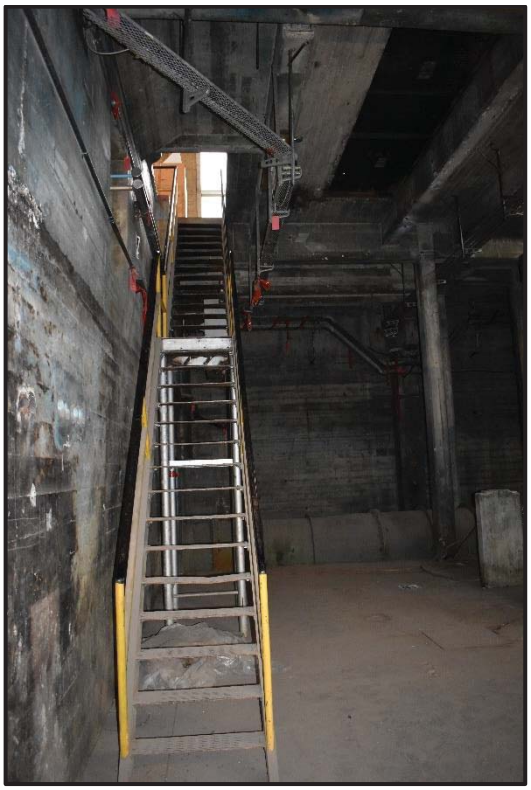
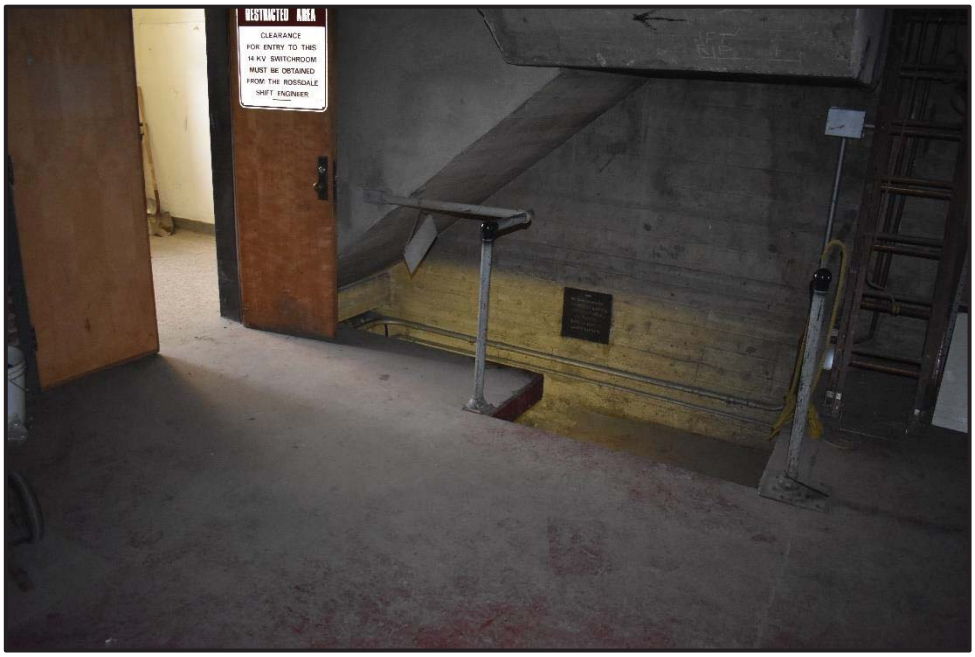


Figure 12-7: Typical Example of Exiting from the Upper Floor Level in Non-Compliant and Unusable Condition

Figure 12-8: Typical Example of an Exit Stair Not Enclosed and Fire Separated



12.9 DESIGN OF EXITS

12.9.1 Exit Widths

Exit stairs and corridors serving the Project buildings are required to have a minimum width of 1,100 mm in accordance with Table 3.4.3.2-A via Sentence 3.4.3.2.(8) unless limited by occupant exiting capacity requirements. Additionally, exit doorways serving the building are required to have a minimum clear width of 800 mm.

Note: Doorways located in a barrier-free path of travel are required to provide a minimum 920 mm in clear width. Doors and doorways located within a barrier-free path of travel are required to conform to the requirements of Article 3.8.3.2.

12.9.2 Minimum Number of Risers

All interior flights of stairs are required to have not less than 3 risers unless the conditions of Sentence 3.3.2.15.(1) are satisfied.

12.9.3 Handrails

As per Article 3.4.6.5., handrails are required on both sides of stairs that are 1,100 mm or more in width and are required to be continuously graspable along their entire length. Where two handrails are provided, one of the handrails must be continuous throughout the length of each stairway, including the landings, except where interrupted by doors or newels at changes of direction. One handrail must extend horizontally at least 300 mm beyond the top and bottom of each flight of stairs and have tactile cues (i.e. colour contrasting strips) to indicate the beginning of the stair and/or ramp. A minimum 50 mm clearance is required to be provided between handrails and the walls to which they are attached. A minimum 60 mm clearance is required if the surface behind the handrail is rough or abrasive. Handrails are to be installed 865 mm to 1070 mm above nosings. Handrails are required to terminate in a manner which will not obstruct pedestrian travel or create a hazard.

12.9.4 Guards

As per Article 3.4.6.6. every exit stair requires a wall or a well secured guard on each side. Guards in exit stairs are required to be not less than 1,070 mm high around landings and along a stairway. Guards are also required where the difference in elevation is more than 600 mm between the walking surface and the adjacent surface.

The guards that protect a level above one storey or 4.2 m are to be designed not to facilitate climbing, with no member, attachment, or opening located between 140 mm and 900 mm above the level being protected by the guard that will facilitate

climbing. Additionally, openings through guards are to be designed to prevent the passage of a 100 mm diameter spherical object.

12.9.5 Run/Rise of Exit Stair Tread

As per Article 3.4.6.8., exit stair treads are to have a minimum rise of 125 mm and maximum rise of 180 mm. The minimum run (nosing to nosing (measured on the horizontal plane, not at an angle)) is to be not less than 280 mm.

12.9.6 Direction of Door Swing

Doors in their swing are not to reduce the required width of an exit to less than 750 mm for exit stairs and landings or to less than 1,100 mm for exit passageways. Additionally, the distance between a stair riser and the leading edge of the door swing is not permitted to be less than 300 mm. Door swing is to be in the direction of exit travel. In accordance with Article 3.4.6.12., all exit doors are to swing on a vertical axis and swing in the direction of exit travel.

12.9.7 Electromagnetic Lock

If electromagnetic locking devices are installed in any building, they are required to be in conformance with Sentence 3.4.6.16.(4).

12.10 OPERATIONAL REQUIREMENTS

Sentence 3.4.6.11.(6) and NFC(AE) Article 2.7.1.8. requires where an exit door leading directly to the outside is subject to being obstructed by parked vehicles or storage because of its location, a visible sign or a physical barrier prohibiting such obstructions shall be installed on the exterior side of the door. Management would need to incorporate a robust management policy/procedure to ensure the egress routes are controlled/managed in a safe effect manner during an evacuation.

Section 12.0 Overview

There are many non-compliances observed within the existing buildings associated with **Section 12.0**. Travel distances are currently non-compliant and additional exiting components/facilities will be required. Exiting from upper floor and lower floor levels in many instances are not provided with protected exit stair enclosures leading directly to the outside, existing stairs would not support a code compliant configuration. Exiting width would not be suitable for the higher calculated occupancy loadings associated with the potential proposed occupancies. This would be a significant design change for the incorporation of building new exiting facilities.

13.0 Vertical Transportation

13.1 ELEVATOR LOCATIONS

The following **Table 13-1** provides [indicative] location of building elevator(s) where required within the project by Articles 3.5.1.1., 3.8.2.3. and 3.8.3.7., however, is subject on the proposed end use occupancy and access requirements to below and/or above storeys/floor levels.

Table 13-1: Requirement for Building Elevator(s)

Building Location	Low Pressure Power-Plant	Pump House #1	Pump House #2	ATCO Gas Building
Elevator Required	Minimum one [1] as required per Articles 3.5.1.1., 3.8.2.3. and 3.8.3.7	If more than one floor level is required to be accessed, a minimum one [1] as required per Articles 3.5.1.1., 3.8.2.3. and 3.8.3.7	If more than one floor level is required to be accessed, a minimum one [1] as required per Articles 3.5.1.1., 3.8.2.3. and 3.8.3.7	N/A

13.2 FIRE SEPARATION

Refer **Table 5-2** for fire separation requirements to elevator shafts and machine rooms.

13.3 ELEVATOR CAR

Where required by Articles 3.5.1.1., 3.8.2.3. and 3.8.3.7, elevators shall conform to Appendix E of ASME A17.1/CSA B44-13 "Safety Code for Elevators and Escalators".

As per Article 3.5.4.1. at least one elevator cab is to be sized to accommodate a stretcher 2,010 mm long and 610 m wide. An elevator satisfying this requirement shall be clearly indicated on the main entrance level of the building.

Section 13.0 Overview

The provision of vertical transportation would be required to be installed where required as per Articles 3.5.1.1., 3.8.2.3. and 3.8.3.7 (subject to the extent of floor levels being occupied), this would introduce significant costings to the project.

14.0 Washroom Requirements

14.1 WASHROOM REQUIREMENT SUMMARY

As per Article 3.7.2.2. the amount of required water closets for the Project buildings are based on the various occupant loads covered in this document i.e. Group A1, A2, D and E and are summarized as follows (please note the below figures are provided as an indicative summary only):

Table 14-1: Washrooms for Various Occupancy Types

Occupancy	Calculated No. of Occupants		Minimum No. of Water Closets	
	Male	Female	Male	Female
Low-Pressure Power Plant – Turbine Hall				
Group A1	1821	1821	14	27
Group A2	1437	1437	12	23
Group D	147	147	4	4
Group E	369	369	2	3
Low-Pressure Power Plant – Switch House				
Group A1	791	791	8	16
Group A2	624	624	8	15
Group D	64	64	3	3
Group E	160	160	1	2
Low-Pressure Power Plant – Boiler Hall				
Group A1	3078	3078	20	39
Group A2	2430	2430	17	33
Group D	248	248	6	6
Group E	624	624	3	5
Pump House #1				
Group A1	212	212	5	9
Group A2	167	167	4	7
Group D	17	17	1	1
Group E	43	43	1	1
Pump House #2				
Group A1	741	741	8	16
Group A2	585	585	7	14
Group D	60	60	3	3
Group E	150	150	1	2
ATCO Gas Building				
Group A1	49	49	1	2
Group A2	38	38	1	2
Group D	4	4	1	1
Group E	10	10	1	1

Section 14.0 Overview

The provision of washroom facilities is greatly under provided and non-compliant with respect to Code requirements for all buildings, this would need to be explored further during the design phase.

Appendices
Table of Contents

A. Appendix A – Overall Project Plan

A.1. FIRE SAFETY PROVISION SKETCHES – SITE PLAN

LOW PRESSURE POWER PLANT OVERALL SITE PLAN

LIST OF DRAWINGS

LEGAL DESCRIPTION

LOT
BLOCK OT
PLAN NB
EDMONTON, ALBERTA

MUNICIPAL ADDRESS:
9469 ROSSDALE ROAD, EDMONTON, ALBERTA

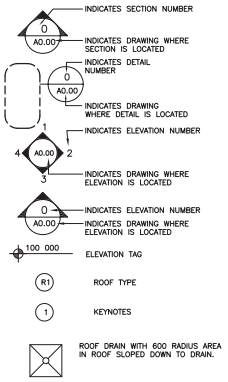
PROJECT SCOPE

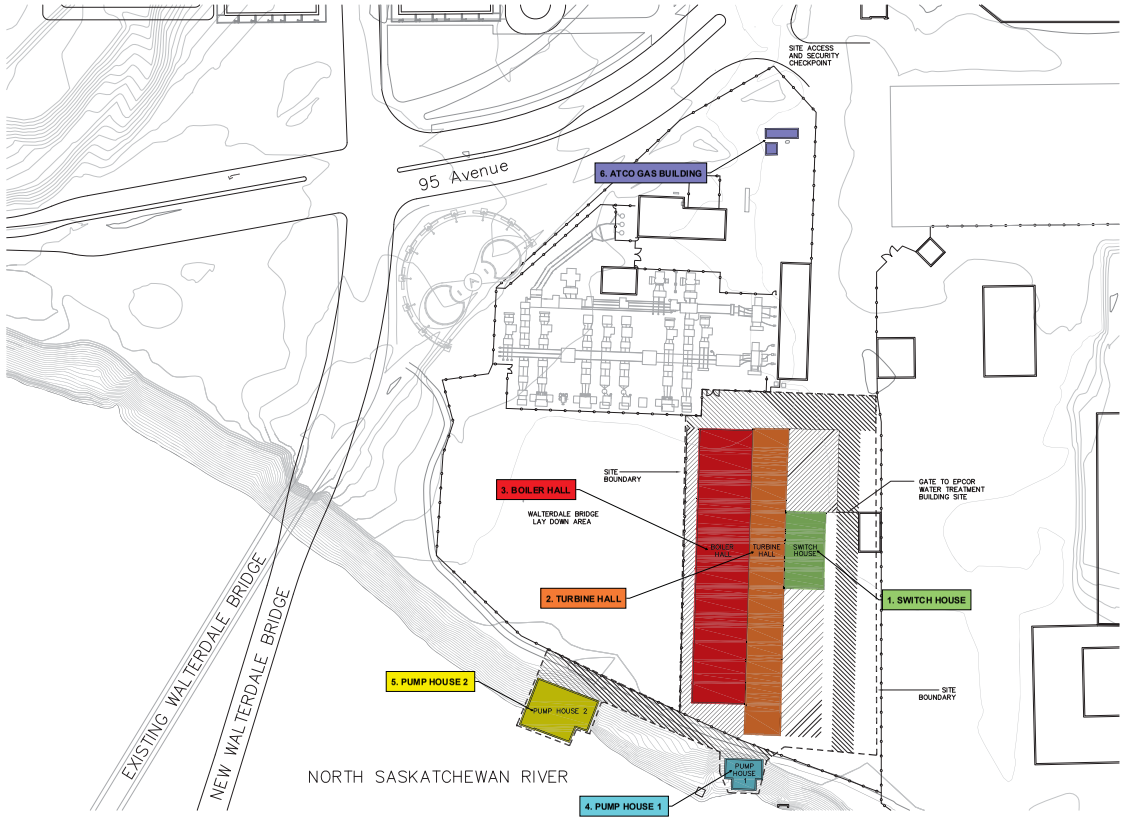
PROJECT SCOPE:
- BOILER HALL ROOF REPLACEMENT,
- EXTERIOR WALL AND WINDOW REPAIRS ON THE BOILER HALL, TURBINE HALL, SWITCH HOUSE AND PUMP HOUSE 2

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
CL OR ℄	CENTER LINE
C/W	COMPLETE WITH
EQ	EQUAL
FLR	FLOOR
FRR	FIRE RESISTANT RATING
HR	HOUR
MAX	MAXIMUM
MIN	MINIMUM
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
O.C.	ON CENTER
PSF	PRESSED STEEL FRAME
SIM	SIMILAR
STC	SOUND TRANSMISSION CLASSIFICATION
T/O	TOP OF
U/S	UNDERSIDE

SYMBOLS LEGEND REFER TO PLANS





1 A0.01 ROSSDALE GENERATING PLANT SITE PLAN
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2 A0.01 ROSSDALE GENERATING PLANT AERIAL PHOTOGRAPH
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PROJECT SCOPE AND INTENT:
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0	CONCEPTUAL FINAL	30.04.21
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JENSEN HUGHES
Advancing the Science of Safety

THE CITY OF Edmonton PROJECT MANAGEMENT & MAINTENANCE SERVICES

project

ROSSDALE GENERATING PLANT STABILIZATION

location : 10155 - 96 AVENUE, EDMONTON

drawing title

LIST OF DRAWINGS, LEGENDS, SITE PLAN

ROSSDALE POWER PLANT PROJECT

BUILDING CODE COMPLIANCE - SCOPE DEFINITION

PROPOSED

SCOPE DEFINITION - FIRE SAFETY PROVISIONS

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SITE PLAN

KD	30/04/21		0
KD	DE		

4C2006720
Rossdale_Power_Plant_Assessment-Rehab, Edmonton

scale AS SHOWN all dimensions are in millimeters

drawn by MPR date

checked by DH date

reviewed by JC date

drawing no. A0.01

sheet no. 1 of ___

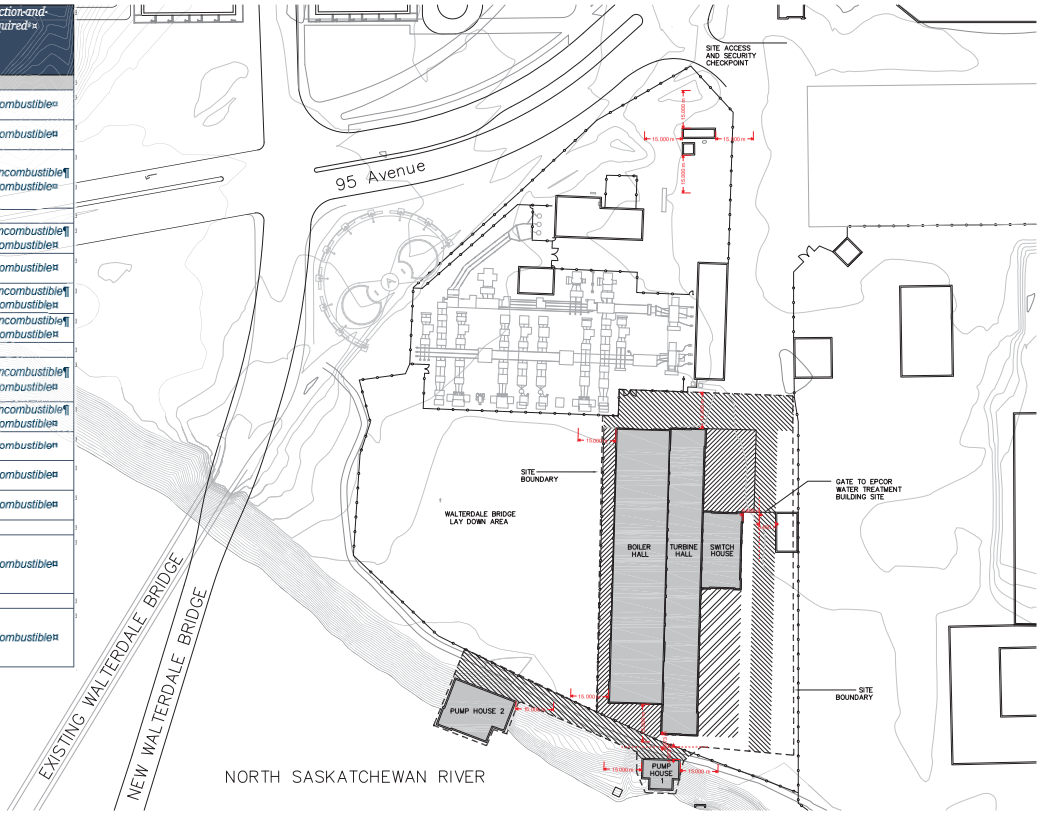
project no. CP-4683

CAD file name: I:\Edm\Models\Buildings\E01129\1\13 2D WD\ARCH\PLOT\CADD

Consultant Cad File Name: (Engineering Services Prototype 2006)

LOW PRESSURE POWER PLANT OVERALL SITE PLAN FOR SPATIAL SEPARATIONS

Elevation	Available Limiting Distance	Percentage of Unprotected Openings Permitted	Size of Exposing Building Face	Actual Percentage of Unprotected Openings	FRR Required	Type of Construction and Cladding Required
Low Pressure Power Plant (If = Group A1, A2 and D)						
North Elevation	> 9.0 m	100%	N/A	-	-	Cladding = Noncombustible
West Elevation	> 9.0 m	100%	N/A	-	-	Cladding = Noncombustible
East Elevation	6.45 m	58.3%*	292 m²	7.56%	45 min FRR	Construction = Noncombustible Cladding = Noncombustible
South Elevation	4.97 m	39.7%*	697 m²	12.06%	45 min FRR	
Low Pressure Power Plant (If = Group E)						
North Elevation	14.40 m	95.2%*	701 m²	16.66%	1 h FRR	Construction = Noncombustible Cladding = Noncombustible
West Elevation	> 15.0 m	100%	N/A	-	-	Cladding = Noncombustible
East Elevation	6.45 m	24.7%*	292 m²	7.56%	2 h FRR	Construction = Noncombustible Cladding = Noncombustible
South Elevation	4.97 m	17.9%*	697 m²	12.06%	2 h FRR	Construction = Noncombustible Cladding = Noncombustible
Pump House #1						
North Elevation (A1, A2 & D)	4.97 m	61.7%*	74 m²	21.68%	45 min FRR	Construction = Noncombustible Cladding = Noncombustible
North Elevation (E)	4.97 m	31.5%*	74 m²	21.68%	45 min FRR	Construction = Noncombustible Cladding = Noncombustible
West Elevation	> 15.0 m	100%	N/A	-	-	Cladding = Noncombustible
East Elevation	> 15.0 m	100%	N/A	-	-	Cladding = Noncombustible
South Elevation	> 15.0 m	100%	N/A	-	-	Cladding = Noncombustible
Pump House #2						
All Elevations (A1, A2, D or E)	> 15.0 m	100%	N/A	-	-	Cladding = Noncombustible
ATCO Gas House						
All Elevations (A1, A2, D or E)	> 15.0 m	100%	N/A	-	-	Cladding = Noncombustible



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ROSSDALE POWER PLANT PROJECT

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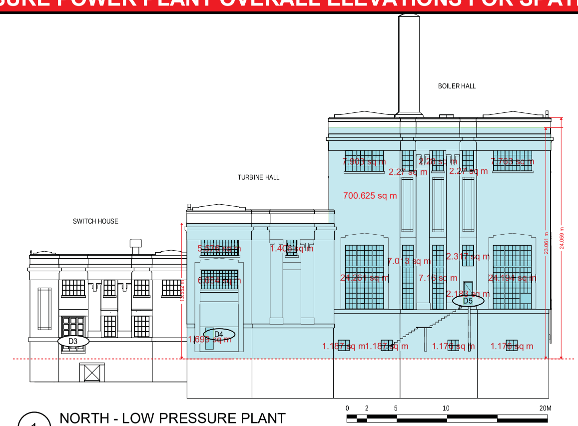
LOW PRESSURE POWER PLANT OVERALL ELEVATIONS FOR SPATIAL & GRADE



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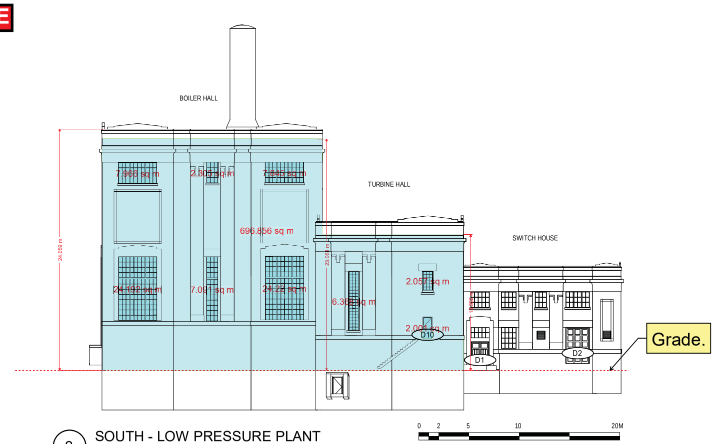

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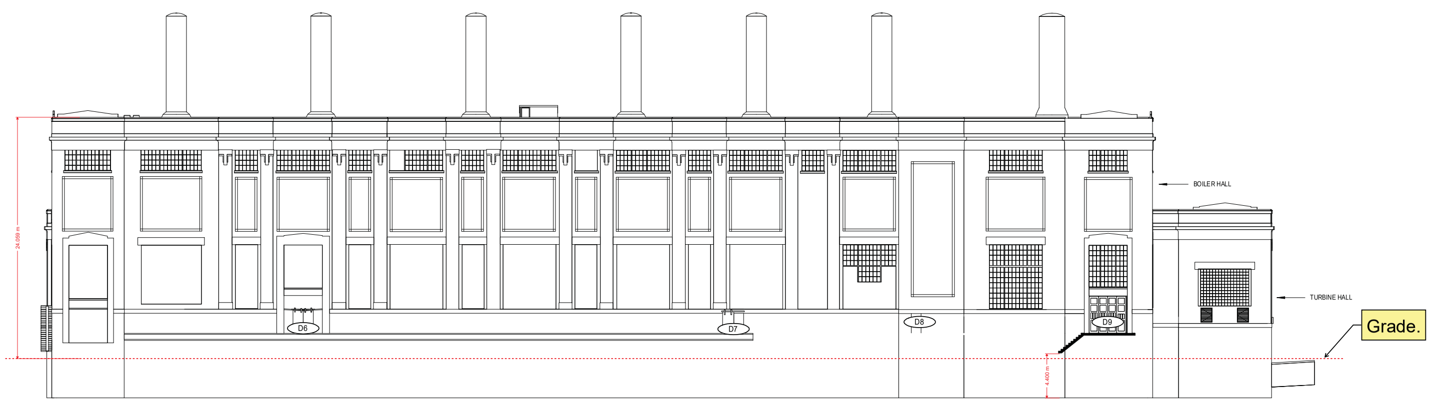

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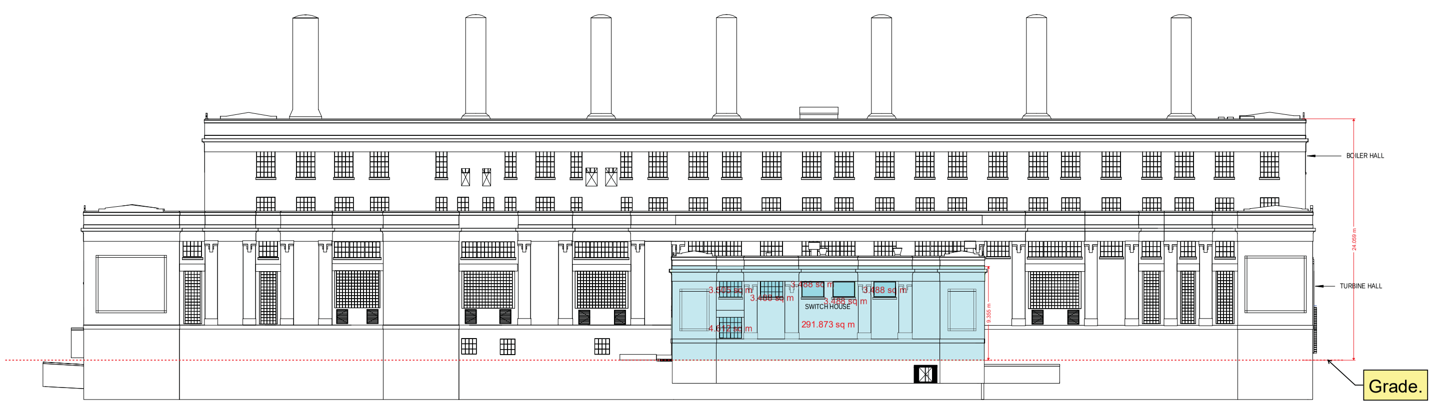

4 EAST - LOW PRESSURE PLANT
1 : 250

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PRIME CONSULTANT/ARCHITECTURAL
the marc boutin architectural collaborative inc.

STRUCTURAL/CIVIL/BUILDING ENVELOPE
Read Jones Christoffersen Ltd

HERITAGE
DFS Inc. Architecture & Design

MECHANICAL/ELECTRICAL
Williams Engineering Canada Inc.

COST
BTY Group

ARCHITECTURAL
Saucier + Perrotte Architectes

BUILDING/FIRE CODE
Jensen Hughes

INDIGENEITY
Nateyawin

CONSULTANT PROJECT 20008

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ROSSDALE POWER PLANT ADVANCED ASSESSMENT AND PRIORITY REHABILITATION - HISTORIC BUILDING RECORD

CP-9496

Department INTEGRATED INFRASTRUCTURE SERVICES

No.	Description	Date

Location ID

Description

Drawing Title

LOW PRESSURE PLANT- EXTERIOR ELEVATIONS

Discipline		Drawn	
Volume		Drawing Number	
Sheet	002		
File			

A.2. FIRE SAFETY PROVISION SKETCHES – FIRE DEPARTMENT ACCESS

LOW PRESSURE POWER PLANT OVERALL SITE PLAN FOR FIRE DEPARTMENT ACCESS

LIST OF DRAWINGS

LEGAL DESCRIPTION

LOT
BLOCK OT
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EDMONTON, ALBERTA

MUNICIPAL ADDRESS:
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- EXTERIOR WALL AND WINDOW REPAIRS ON THE BOILER HALL, TURBINE HALL, SWITCH HOUSE AND PUMP HOUSE 2

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
CL OR ℄	CENTER LINE
C/W	COMPLETE WITH
EQ	EQUAL
FLR	FLOOR
FRR	FIRE RESISTANT RATING
HR	HOUR
MAX	MAXIMUM
MIN	MINIMUM
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
O.C.	ON CENTER
PSF	PRESSED STEEL FRAME
SIM	SIMILAR
STC	SOUND TRANSMISSION CLASSIFICATION
T/O	TOP OF
U/S	UNDERSIDE

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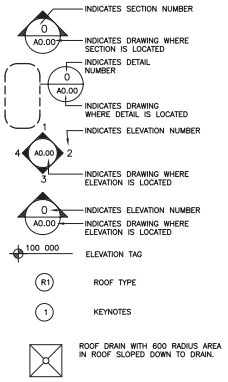

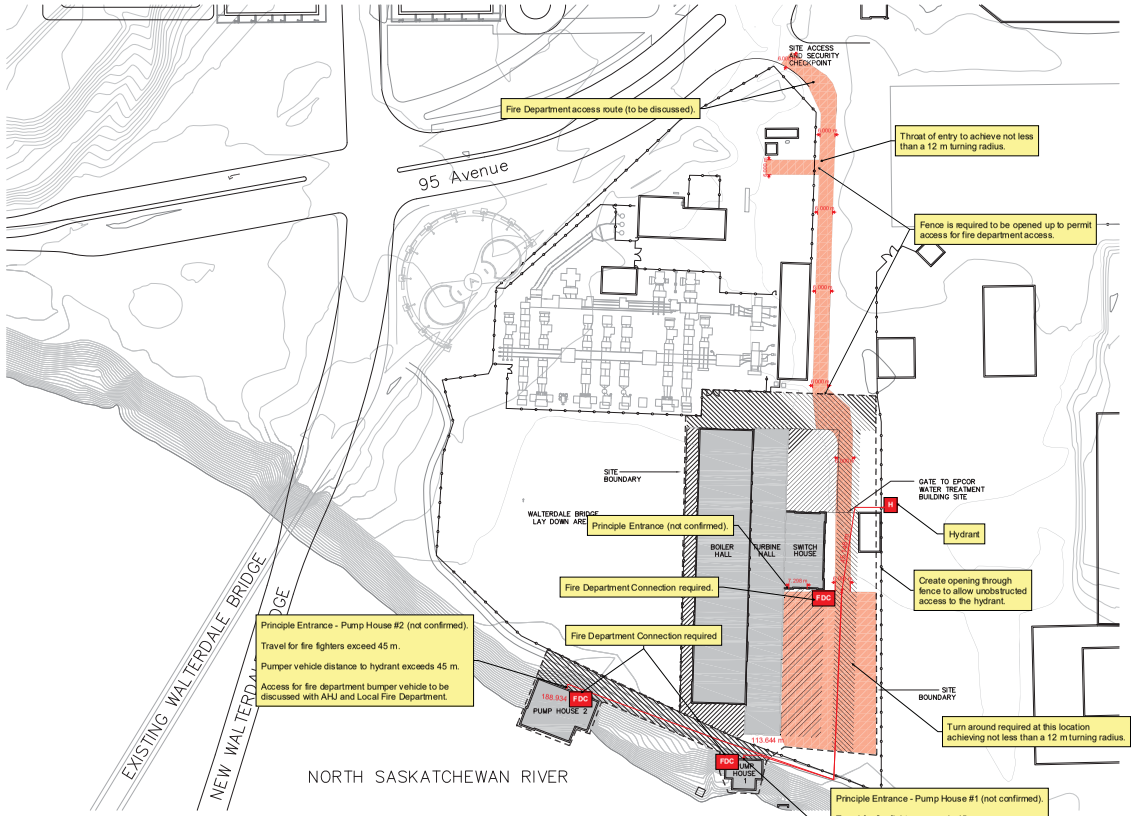

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project

ROSSDALE POWER PLANT PROJECT

BUILDING CODE COMPLIANCE - SCOPE DEFINITION

PROPOSED

SCOPE DEFINITION - FIRE SAFETY PROVISIONS

ISSUED FOR INFORMATION ONLY

FIRE DEPARTMENT PLAN

KD	30/04/21		0
KD	DE		

4C2006720
Rossdale_Power_Plant_Assessment-Rehab_Edmonton

ROSSDALE GENERATING PLANT STABILIZATION

location : 10155 - 96 AVENUE, EDMONTON

drawing title

LIST OF DRAWINGS, LEGENDS, SITE PLAN

scale AS SHOWN all dimensions are in millimeters

drawn by MPR date

checked by DH date

reviewed by JC date

drawing no. A0.01

sheet no. 1 of ___

project no. CP-4683

CAD file name: \\Edm01fs\data\Buildings\E01129\113 2D WD\ARCH\PLOT\CADD

Consultant Cad File Name: (Engineering Services Prototype 2006)

B. Appendix B – Low Pressure Power Plant

B.1. FIRE SAFETY PROVISION SKETCHES

DRAWING LIST

Sheet Name	Sheet Number
LOW PRESSURE PLANT TITLE SHEET	H000
ROS106, ROS107, ROS108 SITE PLAN	H100
ROS106, ROS107, ROS108 LOW PRESSURE PLANT - FLOOR PLANS	H200
ROS105 SWITCH HOUSE BM & MN PLANS	H201
ROS105 SWITCH HOUSE 02 & RF PLANS	H202
ROS106 TURBINE HALL BM FLOOR PLANS	H203
ROS106 TURBINE HALL BM FLOOR PLANS	H204
ROS106 TURBINE HALL MN FLOOR PLANS	H205
ROS106 TURBINE HALL MN FLOOR PLANS	H206
ROS106 TURBINE HALL RF PLAN	H207
ROS107 BOILER HALL- BM FLOOR PLANS	H208
ROS107 BOILER HALL - BM FLOOR PLANS	H209
ROS107 BOILER HALL - MN FLOOR PLANS	H210
ROS107 BOILER HALL - MN FLOOR PLANS	H211
ROS107 BOILER HALL - NORTH TOWER FLOOR PLANS	H212
ROS107 BOILER HALL - CATWALK FLOOR PLANS	H213
ROS107 BOILER HALL - CATWALK FLOOR PLANS	H214
ROS107 BOILER HALL - MZ FLOOR PLANS	H215
ROS107 BOILER HALL - MZ FLOOR PLANS	H216
ROS107 BOILER HALL - RF PLAN	H217
ROS107 BOILER HALL - RF PLAN	H218
ROS106, ROS107, ROS108 LOW PRESSURE PLANT- EXTERIOR ELEVATIONS	H300
ROS105 SWITCH HOUSE EXTERIOR ELEVATIONS	H301
ROS106 TURBINE HALL EXTERIOR ELEVATIONS	H302
ROS106 TURBINE HALL EXTERIOR ELEVATIONS	H303
ROS106 TURBINE HALL EXTERIOR ELEVATIONS	H304
ROS106 TURBINE HALL EXTERIOR ELEVATIONS	H305
ROS107 BOILER HALL- EXTERIOR ELEVATIONS	H306
ROS107 BOILER HALL- EXTERIOR ELEVATIONS	H307
ROS107 BOILER HALL - EXTERIOR ELEVATIONS	H308
ROS107 BOILER HALL - EXTERIOR ELEVATIONS	H309
ROS105 SWITCH HOUSE BM INTERIOR ELEVATIONS	H600
ROS105 SWITCH HOUSE MN INTERIOR ELEVATIONS	H601
ROS105 SWITCH HOUSE 02 INTERIOR ELEVATIONS -	H602
ROS105 SWITCH HOUSE 02 INTERIOR ELEVATIONS	H603
ROS106 TURBINE HALL BM INTERIOR ELEVATIONS	H604
ROS106 TURBINE HALL BM INTERIOR ELEVATIONS	H605
ROS106 TURBINE HALL MN INTERIOR ELEVATIONS	H606
ROS106 TURBINE HALL MN INTERIOR ELEVATIONS	H607
ROS106 TURBINE HALL MN INTERIOR ELEVATIONS	H608
ROS107 BOILER HALL - BM INTERIOR ELEVATIONS	H609
ROS107 BOILER HALL - BM INTERIOR ELEVATIONS	H610
ROS107 BOILER HALL - MN INTERIOR ELEVATIONS	H611
ROS107 BOILER HALL - MN INTERIOR ELEVATIONS	H612
ROS107 BOILER HALL - MN INTERIOR ELEVATIONS	H613
ROS107 BOILER HALL - MN INTERIOR ELEVATIONS	H614
ROS107 BOILER HALL- MZ INTERIOR ELEVATIONS	H615

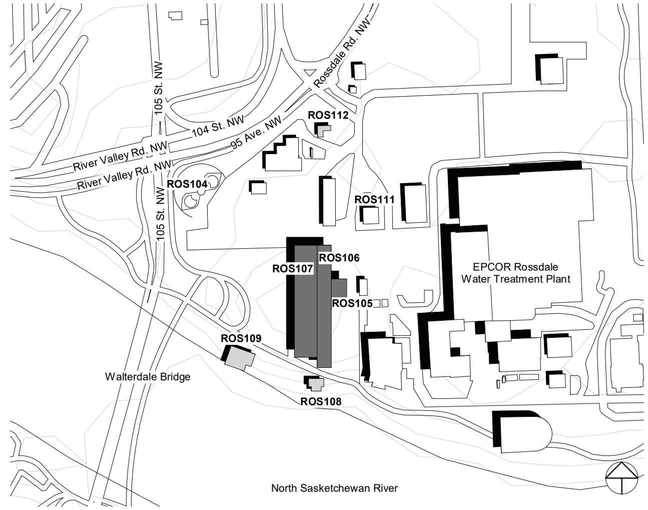
SYMBOLS LEGEND

- NORTH ARROW
- 1 / A101 — INTERIOR ELEVATION MARKER
- EXTERIOR ELEVATION MARKER
- SECTION HEAD
- Name / Elevation — LEVEL MARKER - BELOW GROUND
- Name / Elevation — LEVEL MARKER - ABOVE GROUND
- 101 — WINDOW TAG
- 101 — DOOR TAG
- 1001 — ROOM TAG
- BREAK LINE

SITE PLAN BUILDING LIST

ROS104......Rossdale Burial Grounds
ROS105......Rossdale LP Power Plant - Switch House
ROS106......Rossdale LP Power Plant - Turbine Hall
ROS107......Rossdale LP Power Plant - Boiler Hall
ROS108......Rossdale Pump House #1
ROS109......Rossdale Pump House #2
ROS111......Rossdale EPCOR Administration Building
ROS112......Rossdale Power Plant ATCO Gas Building

HATCH LEGEND



1 SITE PLAN
1 : 2500

DRAWING SET NOTES

The Low Pressure Plant was 2D drafted and 3D modelled in Revit 2020 using data from a variety of sources. The primary source of data was MiraCAD LiDAR scan data from September 16, 2020 and October 23, 2020. A point cloud was generated through terrestrial LiDAR scan data combined with aerial drone photogrammetry. Additional data for the Low Pressure Plant drawing set was gathered from DFS photography, MiraCAD photography, EPCOR's Rossdale Generating Station (RGS) drawing database, and CADMapper.

Accuracy: 50 mm
Level of Development (LOD): 100

Missing Data from Point Cloud: Point cloud data for the East Exterior Elevation of Boiler Hall is minimal. There are also small gaps in Turbine Hall Basement, Boiler Hall Basement, and Switch House 02 - Second Floor.

Missing Data from 3D Revit Model: Structural, Mechanical, Electrical, Civil, and Landscape components have not been modelled. Concrete podiums in Turbine Hall Basement were drafted in 2D, but not 3D. Roof crickets on Boiler Hall roof and Turbine Hall have been drafted in 2D, but not 3D.

Missing Data from 2D Revit Drawings: Structural, Mechanical, Electrical, Civil, and Landscape components have not been drafted.

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CONSULTANT PROJECT 20008

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ROSSDALE POWER PLANT ADVANCED ASSESSMENT AND PRIORITY REHABILITATION - HISTORIC BUILDING RECORD

CP-9496

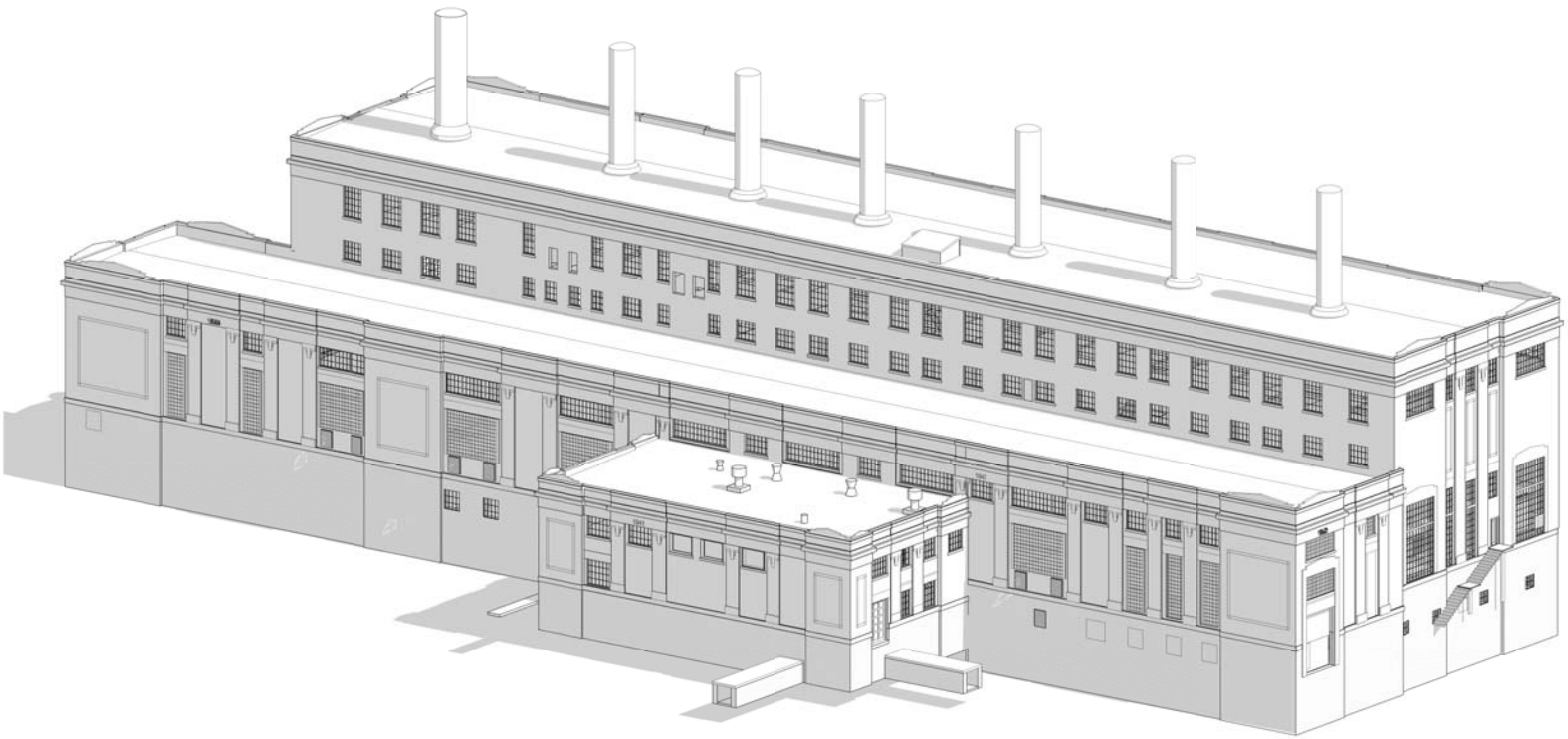
Department: INTEGRATED INFRASTRUCTURE SERVICES

No.	Description	Date

Location ID: ROS 105, ROS106, ROS107
Description: LOW PRESSURE PLANT - BUILDING RECORD

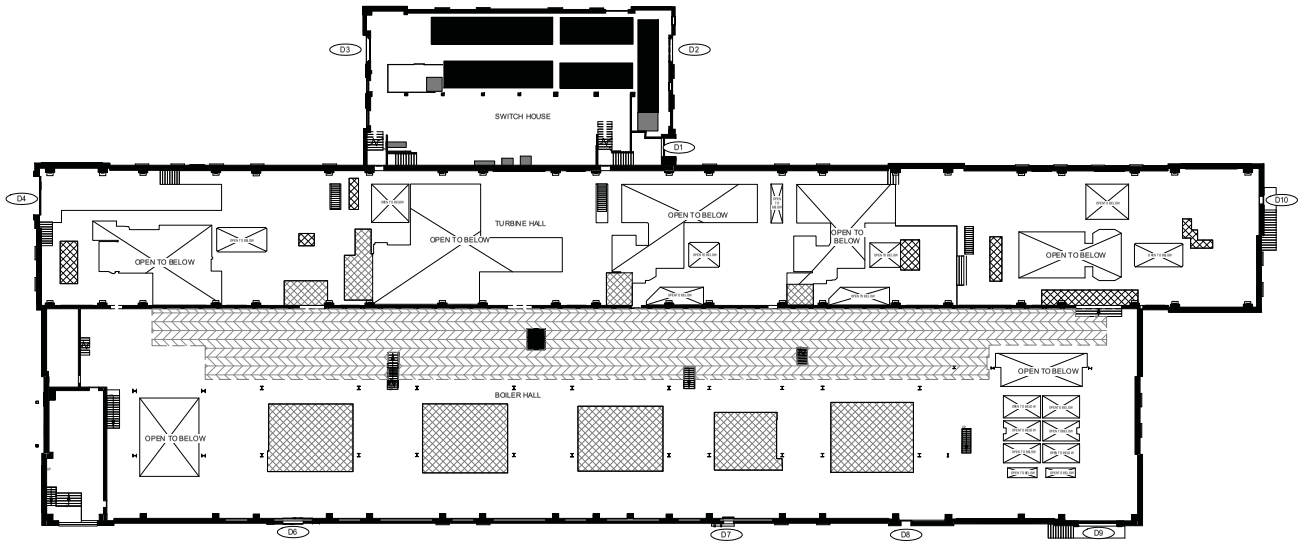
Drawing Title: LOW PRESSURE PLANT TITLE SHEET

Discipline	HERITAGE	Drawn	BD
Volume		Drawing Number	
Sheet	H000		
File			



2 LOW PRESSURE PLANT NORTHEAST PERSPECTIVE

LOW PRESSURE POWER PLANT OVERALL AREA MEASUREMENT



1 MN - LOW PRESSURE PLANT
1 : 250

2 BM - LOW PRESSURE PLANT
1 : 250

HATCH LEGEND

No.	Description	Date
0	CONCEPTUAL FINAL	05.03.21
A	PRELIM DRAFT FOR CLIENT	17.09.21

CHECK ALL INFORMATION ON SITE PRIOR TO COMMENCING WORK. READ IN CONJUCTION WITH THE SPECIFICATION AND OTHER RELEVANT DRAWINGS AND DOCUMENTS

JENSEN HUGHES
Advancing the Science of Safety

ROSSDALE POWER PLANT PROJECT

BUILDING CODE COMPLIANCE - SCOPE DEFINITION

PROPOSED

SCOPE DEFINITION - FIRE SAFETY PROVISIONS

ISSUED FOR INFORMATION ONLY

BUILDING AREA

Drawn	KD	05/03/21	
Design	KD	DE	0

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ROSSDALE POWER PLANT ADVANCED ASSESSMENT AND PRIORITY REHABILITATION - HISTORIC BUILDING RECORD

CP-9496

Department INTEGRATED INFRASTRUCTURE SERVICES

No.	Description	Date
1	BUILDING RECORD	2021-02-03
2	BUILDING RECORD	2021-02-19
3	BUILDING RECORD	2021-03-12

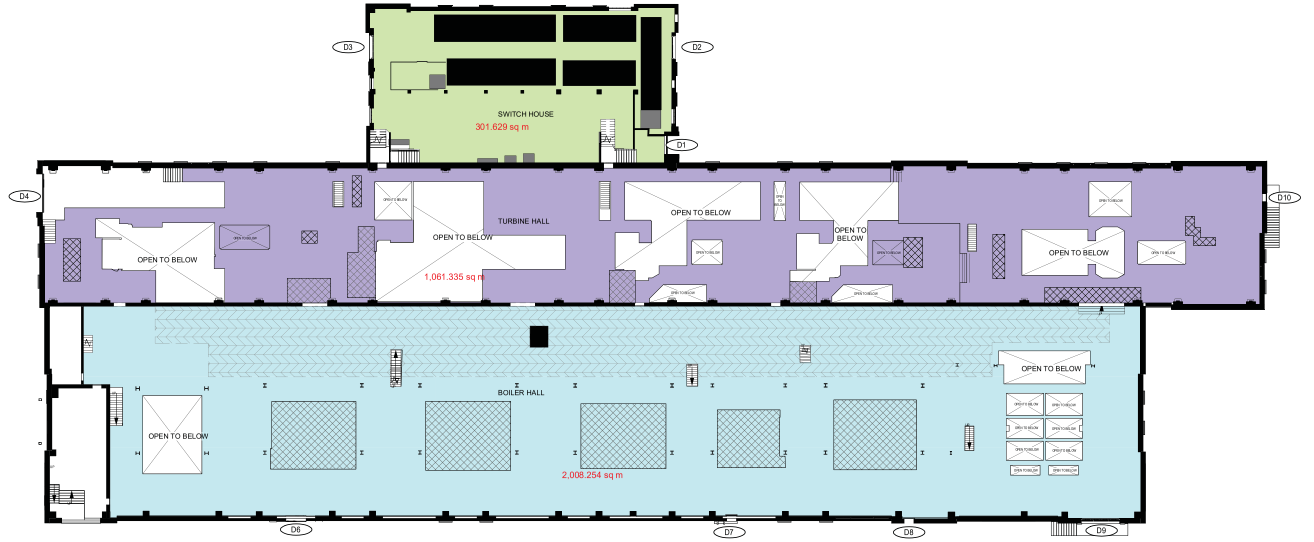
Location ID

Description LOW PRESSURE PLANT - BUILDING RECORD

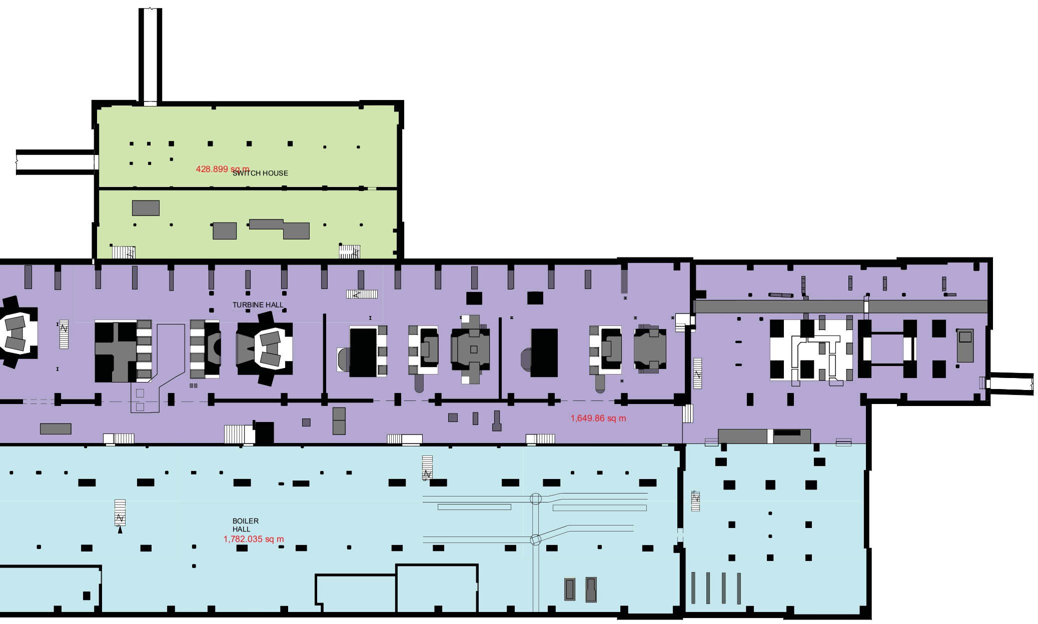
Drawing Title ROS106, ROS107, ROS108 LOW PRESSURE PLANT - FLOOR PLANS

Discipline		Drawn	BD
Volume		Drawing Number	
Sheet	H200		
File			

LOW PRESSURE POWER PLANT OCCUPANT LOAD AREA MEASUREMENT



1 MN - LOW PRESSURE PLANT
1 : 250



2 BM - LOW PRESSURE PLANT
1 : 250

HATCH LEGEND

- CONCRETE
- METAL
- PLYWOOD
- OPEN TO BELOW
- MASKED REGION
- PROJECTING SURFACE
- CUT SURFACE

0	CONCEPTUAL FINAL		05.03.21
A	PRELIM DRAFT FOR CLIENT		12.03.21

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ROSSDALE POWER PLANT PROJECT

BUILDING CODE COMPLIANCE - SCOPE DEFINITION

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OCCUPANT LOAD AREA

DESIGNED BY: KD | DATE: 05/03/21 | ISSUE: 0
DRAWN BY: KD | AUTHENTICATOR: DE

SHEET No: 4C2006720
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1	BUILDING RECORD	2021-02-03
2	BUILDING RECORD	2021-02-19
3	BUILDING RECORD	2021-03-12

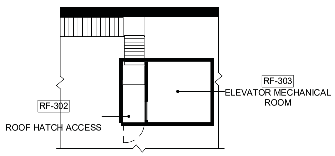
Location ID

Description: LOW PRESSURE PLANT - BUILDING RECORD

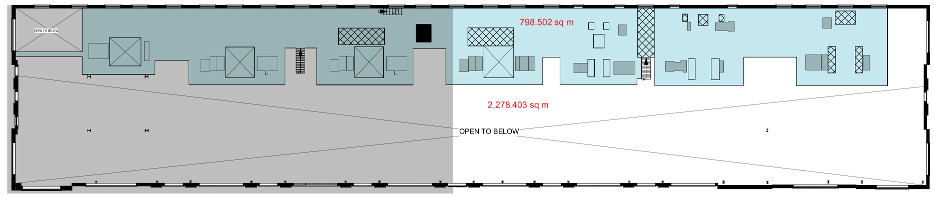
Drawing Title: ROS106, ROS107, ROS108 LOW PRESSURE PLANT - FLOOR PLANS

Discipline		Drawn	BD
Volume		Drawing Number	
Sheet	H200		
File			

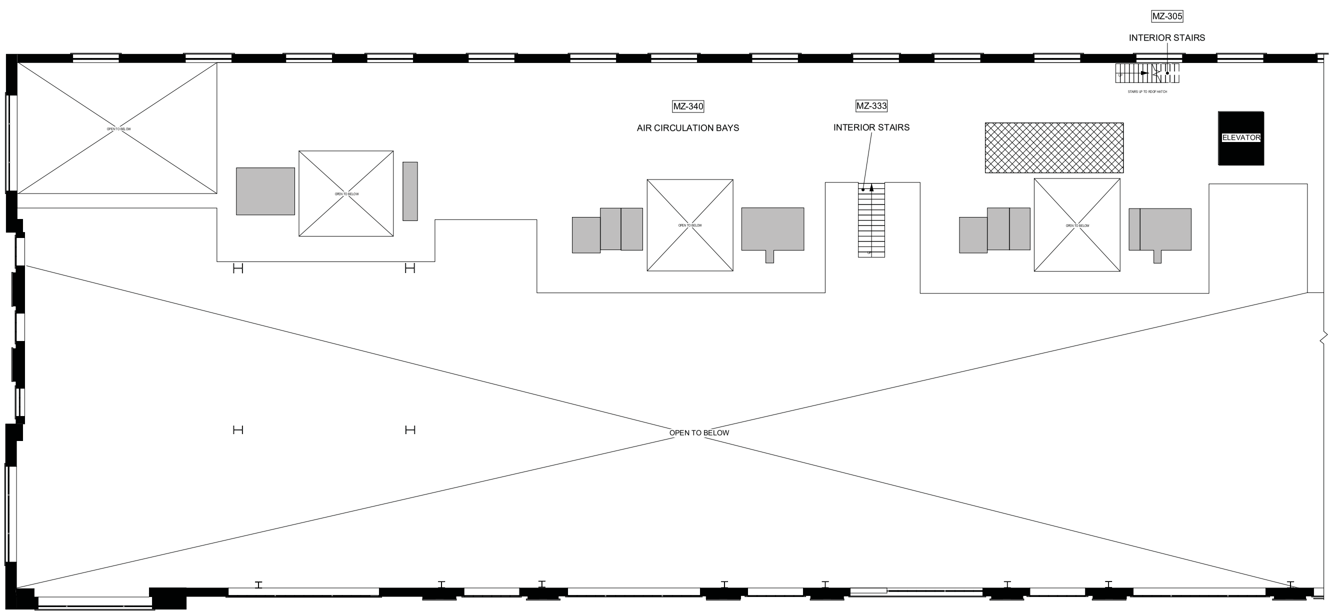
LOW PRESSURE POWER PLANT OCCUPANT LOAD MEZZANINE PLAN (NORTH)



1 RF HATCH ENTRANCE - BOILER HALL
1 : 100



2 KEY MZ - BOILER HALL
1 : 300



3 MZ - BOILER HALL - NORTH
1 : 100

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AREA PLAN

DESIGNED BY: KD | DATE: 05/03/21 | ISSUE: 0
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HATCH LEGEND

- CONCRETE
- METAL
- PLYWOOD
- OPEN TO BELOW
- MASKED REGION
- PROJECTING SURFACE
- CUT SURFACE

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ROSSDALE POWER PLANT ADVANCED ASSESSMENT AND PRIORITY REHABILITATION - HISTORIC BUILDING RECORD

CP-9496

Department: INTEGRATED INFRASTRUCTURE SERVICES

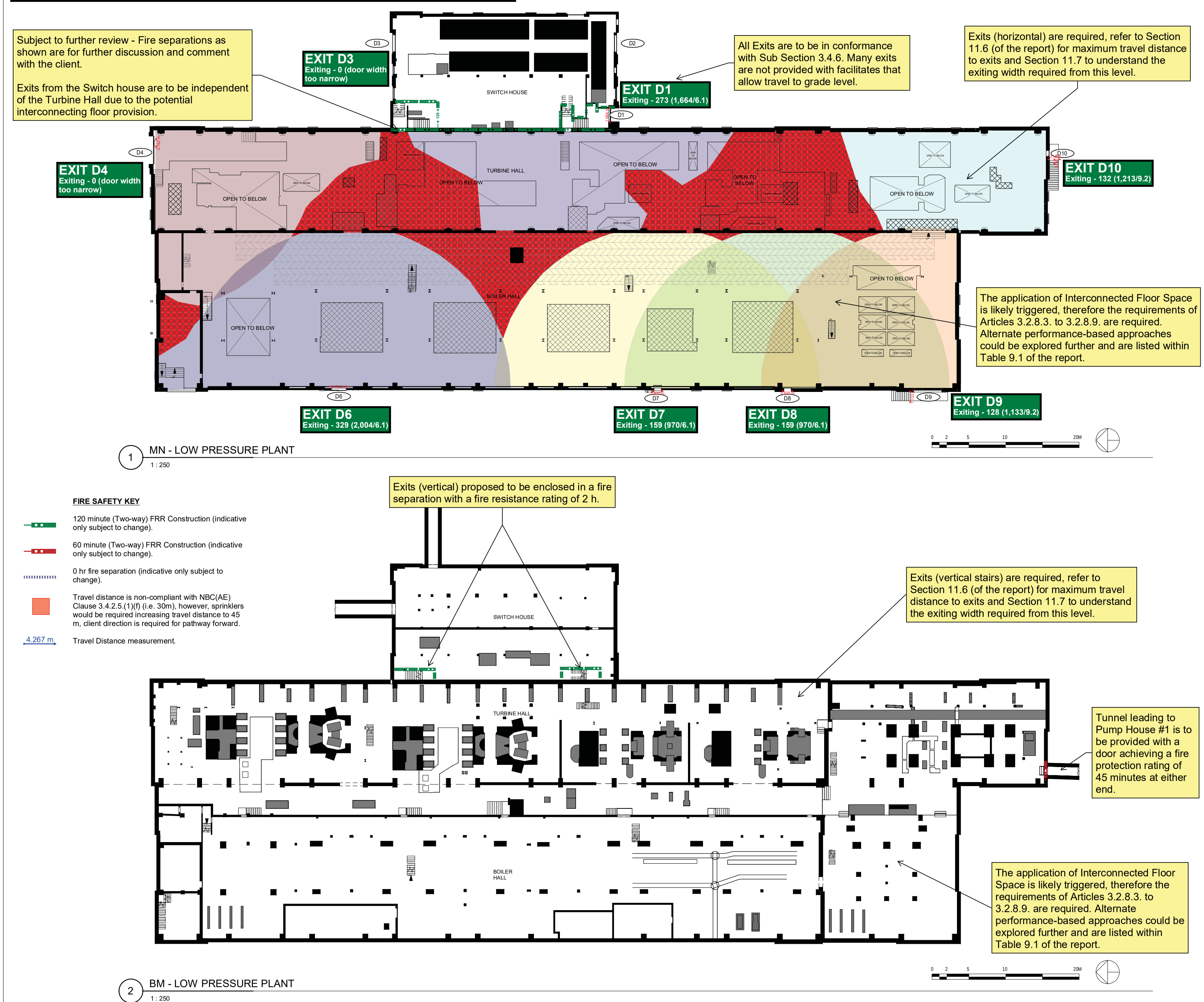
No.	Description	Date
1	BUILDING RECORD	2021-02-02
2	BUILDING RECORD	2021-02-12
3	BUILDING RECORD	2021-02-17
4	CONDTIONS ASSESSMENT	2021-03-07
5	BUILDING RECORD	2021-03-12

Location ID: ROS 105, ROS106, ROS107
Description: LOW PRESSURE PLANT - BUILDING RECORD

Drawing Title: ROS107 BOILER HALL - MZ FLOOR PLANS

Discipline	HERITAGE	Drawn	BD
Volume		Drawing Number	
Sheet	H215		
File			

LOW PRESSURE POWER PLANT TRAVEL DISTANCE AND EXITING



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ROSSDALE POWER PLANT PROJECT

BUILDING CODE COMPLIANCE - SCOPE DEFINITION

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SCOPE DEFINITION - FIRE SAFETY PROVISIONS

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EXITING PLAN LPPP

KD	05/03/21	0
KD	DE	

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ROSSDALE POWER PLANT ADVANCED ASSESSMENT AND PRIORITY REHABILITATION - HISTORIC BUILDING RECORD

CP-9496

Department: INTEGRATED INFRASTRUCTURE SERVICES

No.	Description	Date
1	BUILDING RECORD	2021-02-03
2	BUILDING RECORD	2021-02-19
3	BUILDING RECORD	2021-03-12

Location ID

Description: LOW PRESSURE PLANT - BUILDING RECORD

Drawing Title: ROS106, ROS107, ROS108 LOW PRESSURE PLANT - FLOOR PLANS

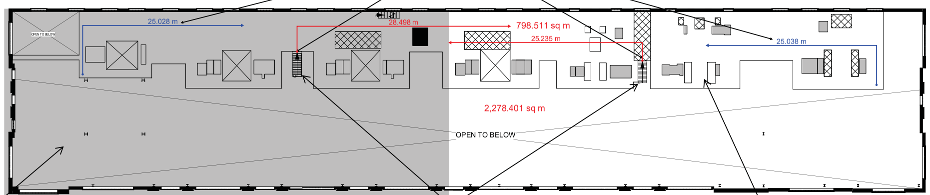
Discipline		Drawn	BD
Volume		Drawing Number	
Sheet	H200		
File			

BOILER HALL MEZZANINE PLAN (NORTH)

FIRE SAFETY KEY

- 120 minute (Two-way) FRR Construction (indicative only subject to change).
- 60 minute (Two-way) FRR Construction (indicative only subject to change).
- 0 hr fire separation (indicative only subject to change).
- Travel distance is non-compliant with NBC(AE) Clause 3.4.2.5.(1)(f) (i.e. 30m), however, sprinklers would be required increasing travel distance to 45 m, client direction is required for pathway forward.
- 5.139 m — Travel Distance measurement.

As per Article 3.3.1.3. the distance a person is to travel in a single direction until an exit is reach is 25 m. The below measured distance exceeds this. Exiting from the mezzanines requires to be discussed further and rationalized.



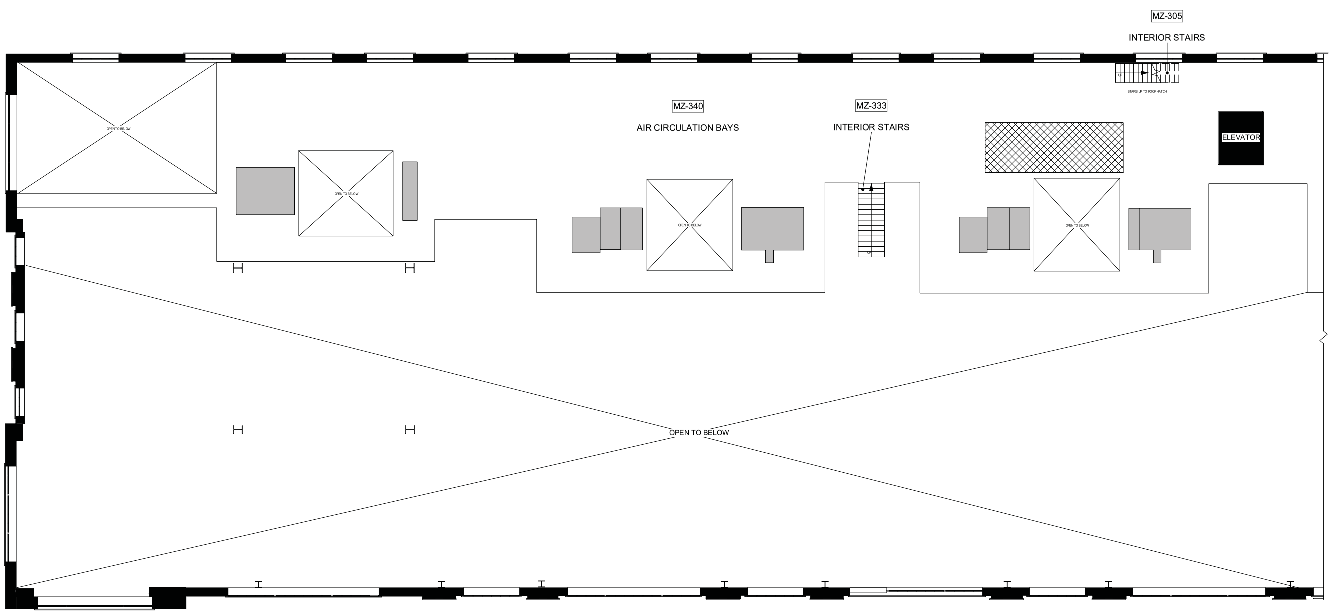
The application of Interconnected Floor Space is likely triggered, therefore the requirements of Articles 3.2.8.3. to 3.2.8.9. are required. Alternate performance-based approaches could be explored further and are listed within Table 9.1 of the report.

Cannot be considered as Exits under Subsection 3.4.1.

Exits (vertical) are required, refer to Section 11.6 (of the report) for maximum travel distance to exits and Section 11.7 to understand the exiting width required from this level.

1 RF HATCH ENTRAN[CE]
1 : 100

2 KEY MZ - BOILER HALL
1 : 300



0 1 2 5m

3 MZ - BOILER HALL - NORTH
1 : 100

HATCH LEGEND

- CONCRETE
- METAL
- PLYWOOD
- OPEN TO BELOW
- MASKED REGION
- PROJECTING SURFACE
- CUT SURFACE

0	CONCEPTUAL FINAL	05.03.21
A	PRELIM DRAFT FOR CLIENT	12.03.21

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SCOPE DEFINITION - FIRE SAFETY PROVISIONS

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MEZZANINE EXITING PLAN

DESIGNED BY: KD	DATE: 05/03/21	0
DRAWN BY: KD	AUTHENTICATOR: DE	

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CONSULTANT PROJECT 20008

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Permit

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Edmonton

ROSSDALE POWER PLANT ADVANCED ASSESSMENT AND PRIORITY REHABILITATION - HISTORIC BUILDING RECORD

CP-9496

Department: INTEGRATED INFRASTRUCTURE SERVICES

No.	Description	Date
1	BUILDING RECORD	2021-02-02
2	BUILDING RECORD	2021-02-12
3	BUILDING RECORD	2021-02-17
4	CONDTIONS ASSESSMENT	2021-03-07
5	BUILDING RECORD	2021-03-12

Location ID: ROS 105, ROS106, ROS107
Description: LOW PRESSURE PLANT - BUILDING RECORD

Drawing Title: ROS107 BOILER HALL - MZ FLOOR PLANS

Discipline	HERITAGE	Drawn	BD
Volume		Drawing Number	
Sheet	H215		
File			

FIRE SAFETY KEY

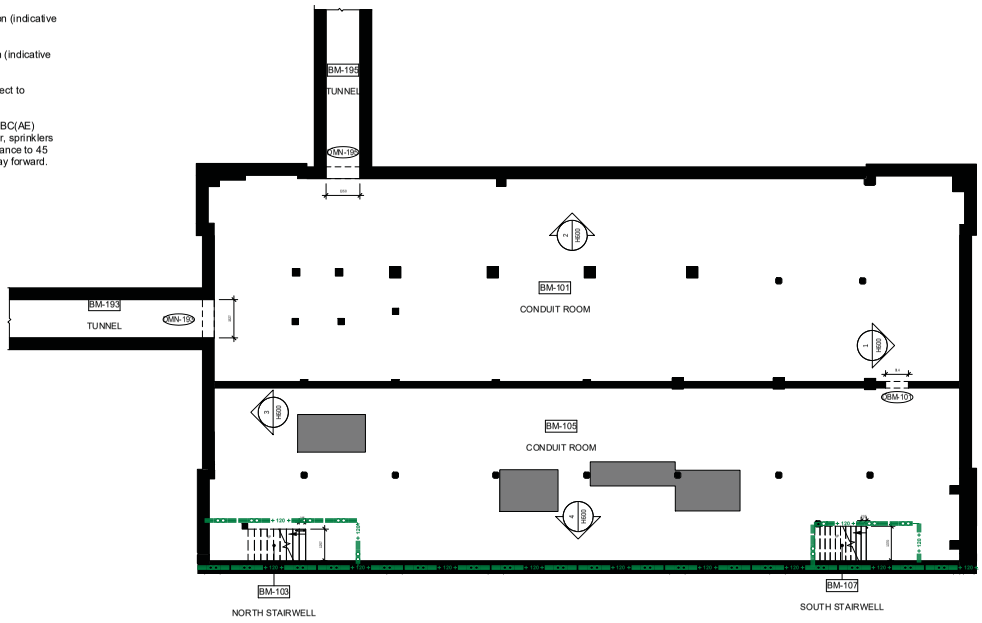
120 minute (Two-way) FRR Construction (indicative only subject to change).

60 minute (Two-way) FRR Construction (indicative only subject to change).

0 hr fire separation (indicative only subject to change).

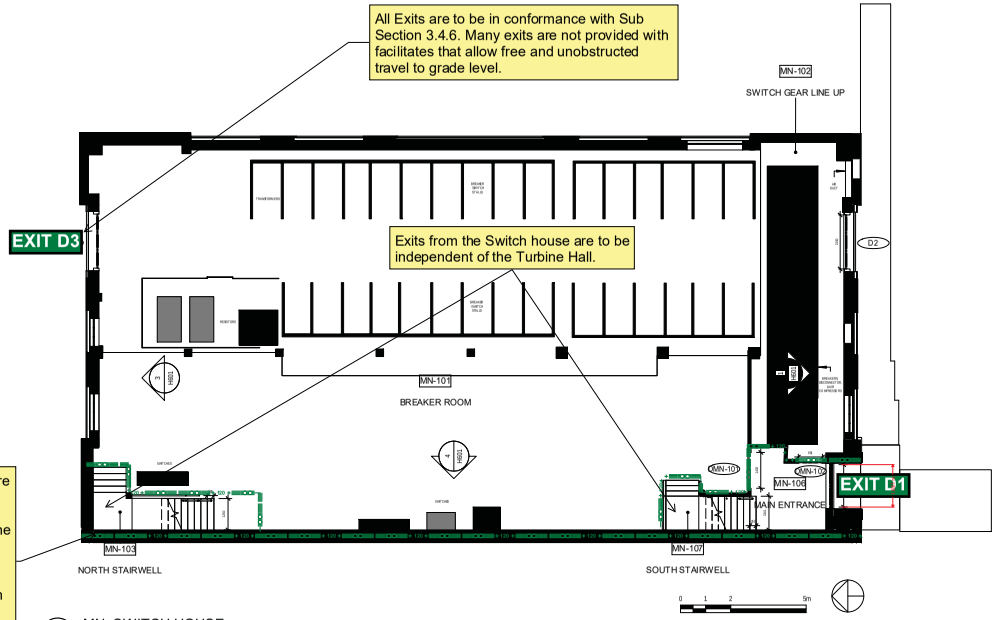
Travel distance is non-compliant with NBC(AE) Clause 3.4.2.5.(1)(f) (i.e. 30m), however, sprinklers would be required increasing travel distance to 45 m, client direction is required for pathway forward.

5.139 m Travel Distance measurement.



1 BM - SWITCH HOUSE
1 : 100

All Exits are to be in conformance with Sub Section 3.4.6. Many exits are not provided with facilitates that allow free and unobstructed travel to grade level.



2 MN -SWITCH HOUSE
1 : 100

Subject to further review - Fire separations as shown are for further discussion and comment with the client.

Exits from the Switch house are to be independent of the Turbine Hall due to the potential interconnecting floor provision.

The Switch House is propose to be fully separated from the adjacent Turbine and Boiler hall spaces to remove the interconnected floor space requirement being extended into this space also.

HATCH LEGEND

0	CONCEPTUAL FINAL		05.03.21
A	PRELIM DRAFT FOR CLIENT		12.03.21
NO.	SUBMISSION	BY	DATE

CHECK ALL INFORMATION ON SITE PRIOR TO COMMENCING WORK. READ IN CONJUCTION WITH THE SPECIFICATION AND OTHER RELEVANT DRAWINGS AND DOCUMENTS

JENSEN HUGHES
Advancing the Science of Safety

ROSSDALE POWER PLANT PROJECT

BUILDING CODE COMPLIANCE - SCOPE DEFINITION

PROPOSED

SCOPE DEFINITION - FIRE SAFETY PROVISIONS

ISSUED FOR INFORMATION ONLY

SWITCH HOUSE EXITING

DRAWN BY	KD	DATE 05/03/21	NO. 0
CHECKED BY	KD	DISCIPLINE DE	
JOB NO.	4C20067.20		
PROJECT	Rossdale_Power_Plant_Assessment-Rehab, Edmonton		

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CONSULTANT PROJECT 20008

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Edmonton

ROSSDALE POWER PLANT ADVANCED ASSESSMENT AND PRIORITY REHABILITATION - HISTORIC BUILDING RECORD

CP-9496

Department INTEGRATED INFRASTRUCTURE SERVICES

No.	Description	Date
1	BUILDING RECORD	2021-01-19
2	BUILDING RECORD	2021-01-27
3	BUILDING RECORD	2021-02-09
4	BUILDING RECORD	2021-02-19
5	CONDTIONS ASSESSMENT	2021-03-06
6	CONDTIONS ASSESSMENT	2021-03-07
7	BUILDING RECORD	2021-03-12

Location ID ROS 105, ROS106, ROS107

Description LOW PRESSURE PLANT - BUILDING RECORD

Drawing Title ROS105 SWITCH HOUSE BM & MN PLANS

Discipline	HERITAGE	Drawn	BD
Volume		Drawing Number	
Sheet	H201		
File			

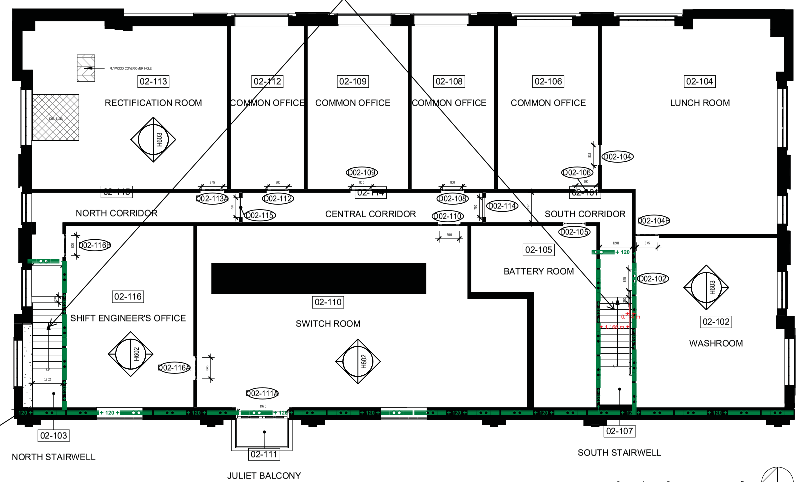
FIRE SAFETY KEY

- 120 minute (Two-way) FRR Construction (indicative only subject to change).
- 60 minute (Two-way) FRR Construction (indicative only subject to change).
- 0 hr fire separation (indicative only subject to change).
- Travel distance is non-compliant with NBC(AE) Clause 3.4.2.5.(1)(f) (i.e. 30m), however, sprinklers would be required increasing travel distance to 45 m, client direction is required for pathway forward.
- 1.713 m — Travel Distance measurement.

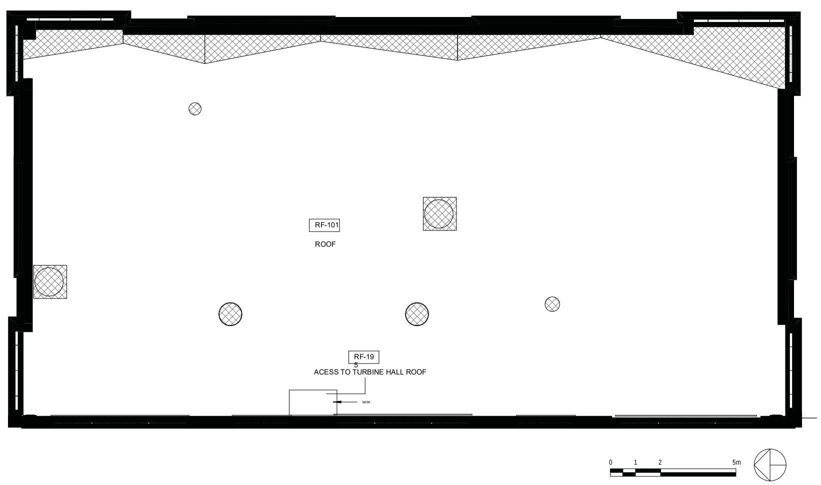
Exits from the Switch house are to be independent of the Turbine Hall.

Subject to further review fire separations provided are for further discussion and comment with the client.

The Switch House is propose to be fully separated from the adjacent Turbine and Boiler hall spaces to remove the interconnected floor space requirement being extended into this space also.



1 02 - SWITCH HOUSE
1 : 100



2 RF - SWITCH HOUSE
1 : 100

HATCH LEGEND

0	CONCEPTUAL FINAL		05.03.21
A	PRELIM DRAFT FOR CLIENT		12.03.21

CHECK ALL INFORMATION ON SITE PRIOR TO COMMENCING WORK. READ IN CONJUCTION WITH THE SPECIFICATION AND OTHER RELEVANT DRAWINGS AND DOCUMENTS

JENSEN HUGHES
Advancing the Science of Safety

ROSSDALE POWER PLANT PROJECT

BUILDING CODE COMPLIANCE - SCOPE DEFINITION

PROPOSED

SCOPE DEFINITION - FIRE SAFETY PROVISIONS

ISSUED FOR INFORMATION ONLY

SWITCH HOUSE EXITING

KD	05/03/21	0
KD	DE	

4C2006720
Rossdale_Power_Plant_Assessment-Rehab, Edmonton

Consultant

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ROSSDALE POWER PLANT ADVANCED ASSESSMENT AND PRIORITY REHABILITATION - HISTORIC BUILDING RECORD

CP-9496

Department INTEGRATED INFRASTRUCTURE SERVICES

No.	Description	Date
1	BUILDING RECORD	2021-01-19
2	BUILDING RECORD	2021-01-27
3	BUILDING RECORD	2021-02-09
4	BUILDING RECORD	2021-02-19
5	CONDTIONS ASSESSMENT	2021-03-06
6	CONDTIONS ASSESSMENT	2021-03-07
7	BUILDING RECORD	2021-03-12

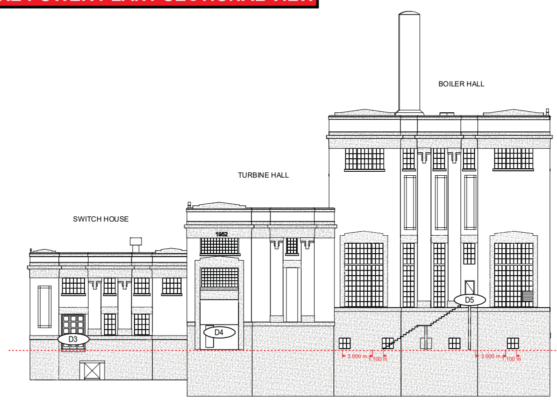
Location ID ROS 105, ROS106, ROS107
Description LOW PRESSURE PLANT - BUILDING RECORD

Drawing Title ROS105 SWITCH HOUSE 02 & RF PLANS

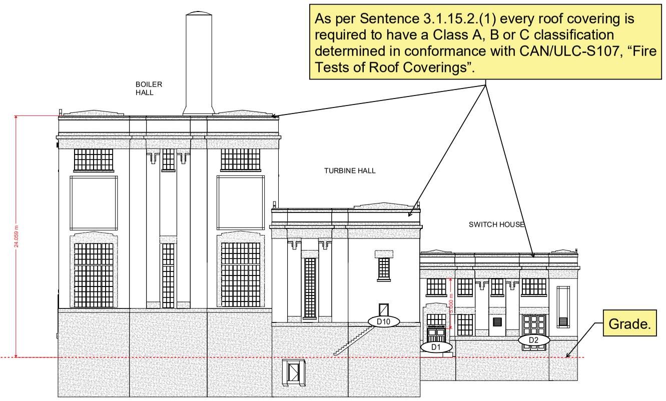
Discipline	HERITAGE	Drawn	BD
Volume		Drawing Number	
Sheet	H202		
File			

LOW PRESSURE POWER PLANT SECTIONAL VIEW

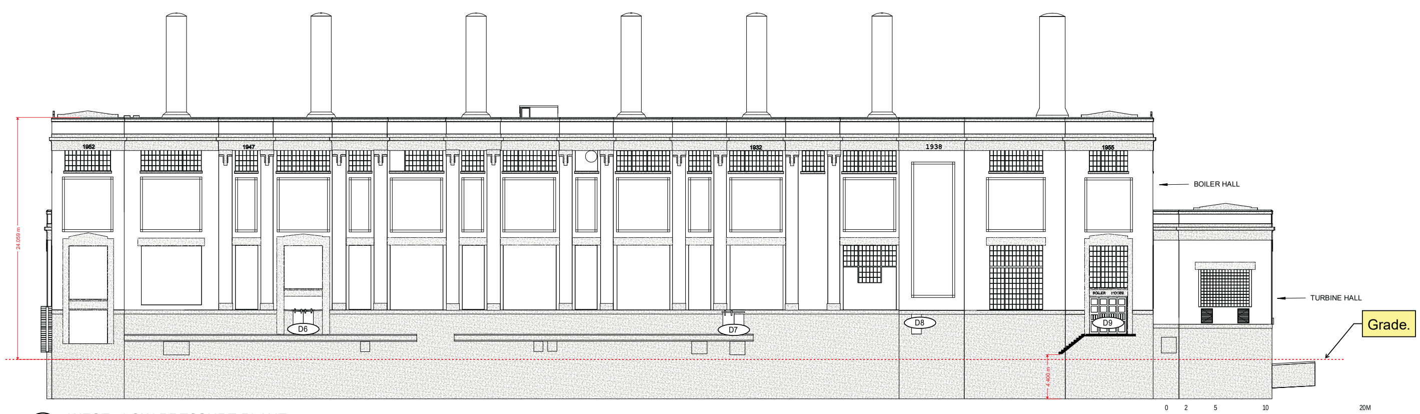
As per Sentence 3.1.15.2.(1) every roof covering is required to have a Class A, B or C classification determined in conformance with CAN/ULC-S107, "Fire Tests of Roof Coverings".



1 NORTH - LOW PRESSURE PLANT
1 : 250



2 SOUTH - LOW PRESSURE PLANT
1 : 250



3 WEST - LOW PRESSURE PLANT
1 : 250

4 EAST - LOW PRESSURE PLANT
1 : 250

0	CONCEPTUAL FINAL		05.03.21
A	PRELIM DRAFT FOR CLIENT		12.03.21

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JENSEN HUGHES
Advancing the Science of Safety

PROJECT: ROSSDALE POWER PLANT PROJECT

BUILDING CODE COMPLIANCE - SCOPE DEFINITION

SHEET TILE: PROPOSED

SCOPE DEFINITION - FIRE SAFETY PROVISIONS

ISSUED FOR INFORMATION ONLY

SECTIONAL VIEW

DESIGNED BY: KD	DATE: 05/03/21	ISSUE 0
DRAWN BY: KD	AUTHENTICATOR: DE	

SHEET No 4C2006720
Rossdale_Power_Plant_Assessment-Rehab, Edmonton

DRAWING NOTES

All wall assemblies are brick unless drafted with

HATCH LEGEND

- CONCRETE
- METAL
- PLYWOOD
- OPEN TO BELOW
- MASKED REGION
- PROJECTING SURFACE
- CUT SURFACE

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CONSULTANT PROJECT 20008

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ROSSDALE POWER PLANT
ADVANCED ASSESSMENT AND PRIORITY REHABILITATION - HISTORIC BUILDING RECORD

CP-9496

Department: INTEGRATED INFRASTRUCTURE SERVICES

No.	Description	Date
1	BUILDING RECORD	2021-02-03
2	BUILDING RECORD	2021-02-19
3	BUILDING RECORD	2021-03-12
4	BUILDING RECORD	2021-03-15

Location ID

Description: LOW PRESSURE PLANT - BUILDING RECORD

Drawing Title: ROS106, ROS107, ROS108 LOW PRESSURE PLANT- EXTERIOR ELEVATIONS

Discipline	HERITAGE	Drawn	BD
Volume		Drawing Number	
Sheet	H300		
File			

C. Appendix C – Pump House #1

C.1. FIRE SAFETY PROVISION SKETCHES

SYMBOLS LEGEND

- NORTH ARROW
- INTERIOR ELEVATION MARKER
- EXTERIOR ELEVATION MARKER
- SECTION HEAD
- LEVEL MARKER - BELOW GROUND
- LEVEL MARKER - ABOVE GROUND
- WINDOW TAG
- DOOR TAG
- ROOM TAG
- BREAK LINE

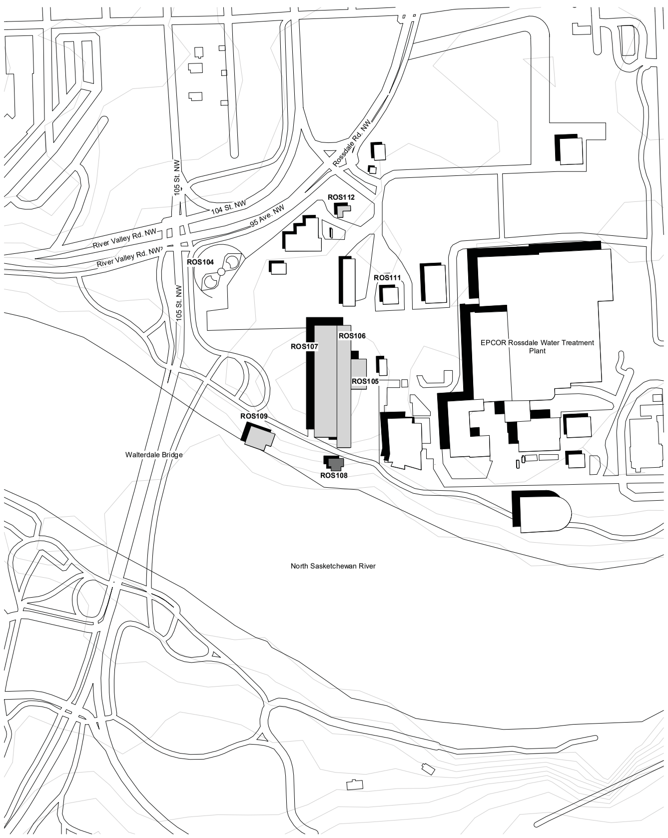
HATCHES LEGEND

DRAWING LIST

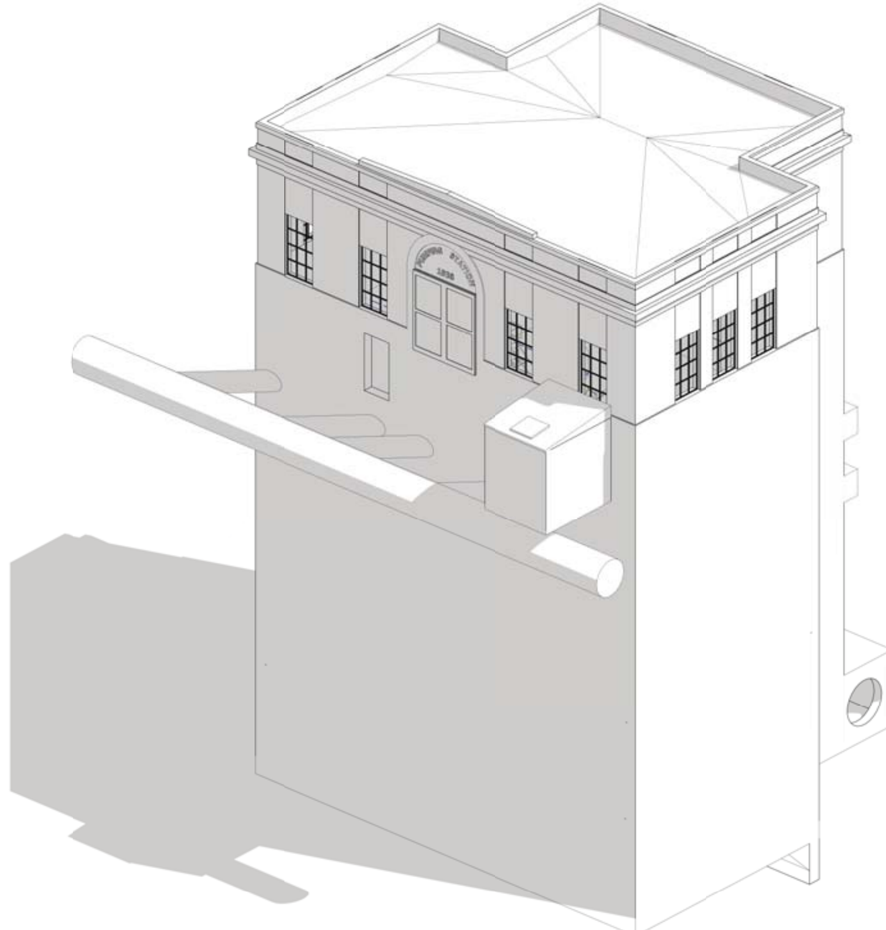
Sheet Name	Sheet Number
PUMP HOUSE #1 TITLE SHEET	H000
SITE PLAN	H100
PLANS	H200
EXTERIOR ELEVATIONS	H300
INTERIOR ELEVATIONS	H600

SITE PLAN BUILDING LIST

ROS104......Rossdale Burial Grounds
ROS105......Rossdale LP Power Plant - Switch House
ROS106......Rossdale LP Power Plant - Turbine Hall
ROS107......Rossdale LP Power Plant - Boiler Hall
ROS108......Rossdale Pump House #1
ROS109......Rossdale Pump House #2
ROS111......Rossdale EPCOR Administration Building
ROS112......Rossdale Power Plant ATCO Gas Building



1 SITE PLAN
1 : 2500



2 PUMP HOUSE #1 NORTHWEST PERSPECTIVE

DRAWING SET NOTES

Pump Houe #1 was 2D drafted and 3D modelled in Revit 2020 using data from a variety of sources. The primary source of data was MiraCAD LiDAR scan data from September 16, 2020 and October 23, 2020.A point cloud was generated through terrestrial LiDAR scan data combined with aerial drone photograpmmetry. Additional data for Pump House #1 drawing set was gathered from DFS photography, MiraCAD photography, EPCOR'S Rossdale Generating Station (RGS) drawing database, and CADMapper.

Accuracy: 50 mm
Level of Development (LOD): 100

Missing Data from Point Cloud: Wet wells were not accessible for scanning. Point cloud data on south exterior elevation was limited.

Missing Data from 3D Revit Model: Structural, Mechanical, Electrical, Civil, and Landscape components have not been modelled.

Missing Data from 2D Revit Drawings: Structural, Mechanical, Electrical, Civil, and Landscape components have not been drafted.

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CONSULTANT PROJECT 20008

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Permit

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ROSSDALE POWER PLANT
ADVANCED ASSESSMENT AND
PRIORITY REHABILITATION -
HISTORIC BUILDING RECORD

CP-9496

Department INTEGRATED INFRASTRUCTURE SERVICES

No.	Description	Date

Location ID

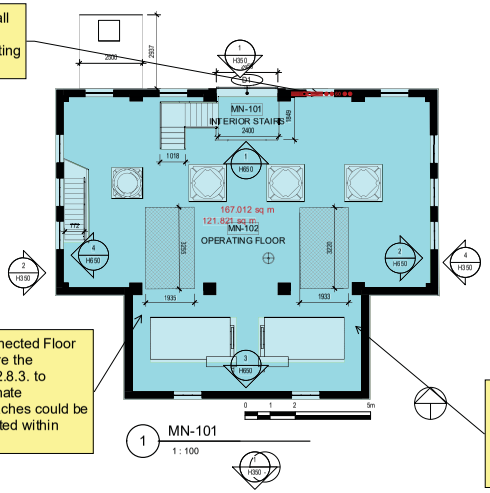
Description PUMP HOUSE #1 BUILDING RECORD

Drawing Title PUMP HOUSE #1 TITLE SHEET

Discipline	HERITAGE	Drawn	KC
Volume		Drawing Number	
Sheet	H000		
File			

Tunnel leading to Turbine Hall is to be provided with a door achieving a fire protection rating of 45 minutes at either end.

The application of Interconnected Floor Space is triggered, therefore the requirements of Articles 3.2.8.3. to 3.2.8.9. are required. Alternate performance-based approaches could be explored further and are listed within Table 9.1 of the report.



1 MN-101
1 : 100

FIRE SAFETY KEY

120 minute (Two-way) FRR Construction (indicative only subject to change).

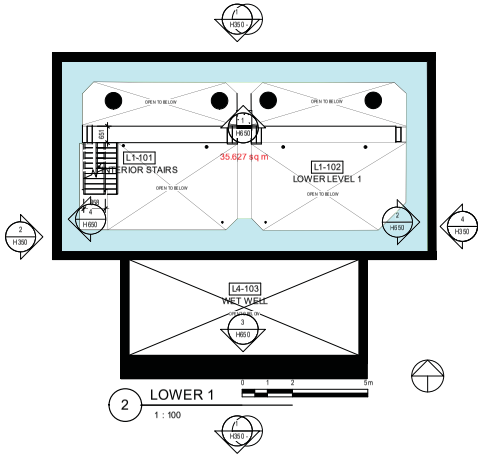
60 minute (Two-way) FRR Construction (indicative only subject to change).

0 hr fire separation (indicative only subject to change).

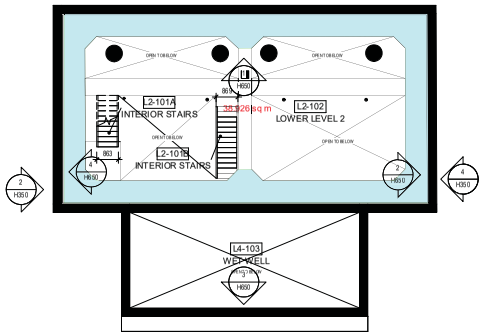
Travel distance is non-compliant with NBC(AE) Clause 3.4.2.5.(1)(f) (i.e. 30m), however, sprinklers would be required increasing travel distance to 45 m, client direction is required for pathway forward.

1.713 m Travel Distance measurement.

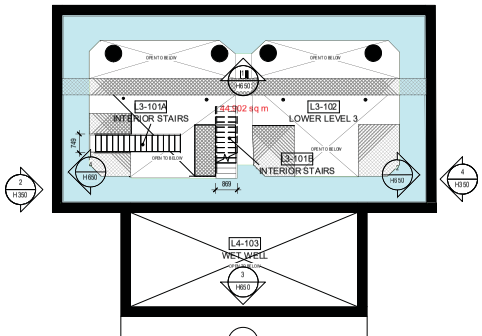
Exits (horizontal & vertical) are required throughout all levels in Pump House #1, refer to Section 11.6 (of the report) for maximum travel distance to exits requirements and Section 11.7 to understand the exiting width required from this building.



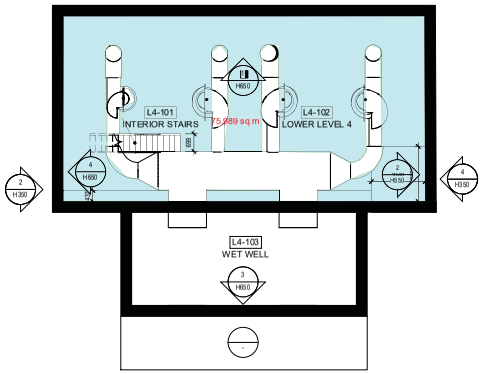
2 LOWER 1
1 : 100



3 LOWER 2
1 : 100

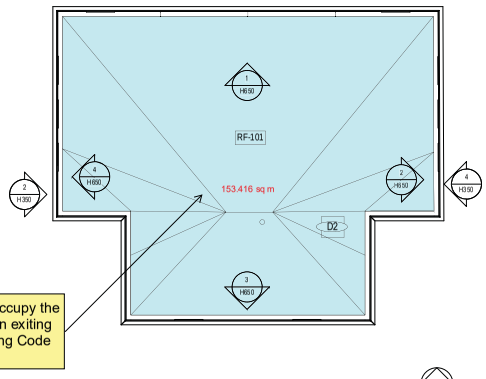


4 LOWER 3
1 : 100



5 LOWER 4 - PUMP
1 : 100

Potential option to occupy the roof would require an exiting evaluation for Building Code compliance.



6 MN-102-ROOF
1 : 100

0	CONCEPTUAL FINAL	30.04.21
A	PRELIM DRAFT FOR CLIENT	12.03.21

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JENSEN HUGHES
Advancing the Science of Safety

ROSSDALE POWER PLANT PROJECT

BUILDING CODE COMPLIANCE - SCOPE DEFINITION

PROPOSED

SCOPE DEFINITION - FIRE SAFETY PROVISIONS

ISSUED FOR INFORMATION ONLY

PUMP HOUSE #1 EXITING

CHECKED	KD	30/04/21	
DRAWN	KD	APPROVED DE	0
JOB No.	4C2006720		
PROJECT	Rossdale_Power_Plant_Assessment-Rehab, Edmonton		

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CONSULTANT PROJECT 20008

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ROSSDALE POWER PLANT
ADVANCED ASSESSMENT AND PRIORITY REHABILITATION - HISTORIC BUILDING RECORD

CP-9496

Department INTEGRATED INFRASTRUCTURE SERVICES

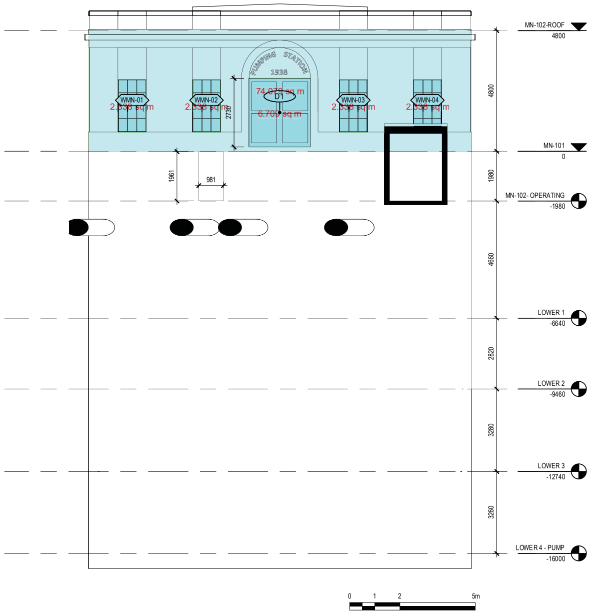
No.	Description	Date
1	EXAMPLE	2021-01-13
2	DRAFT	2021-02-12
3	CORRECTION	2021-03-04

Location ID ROS108

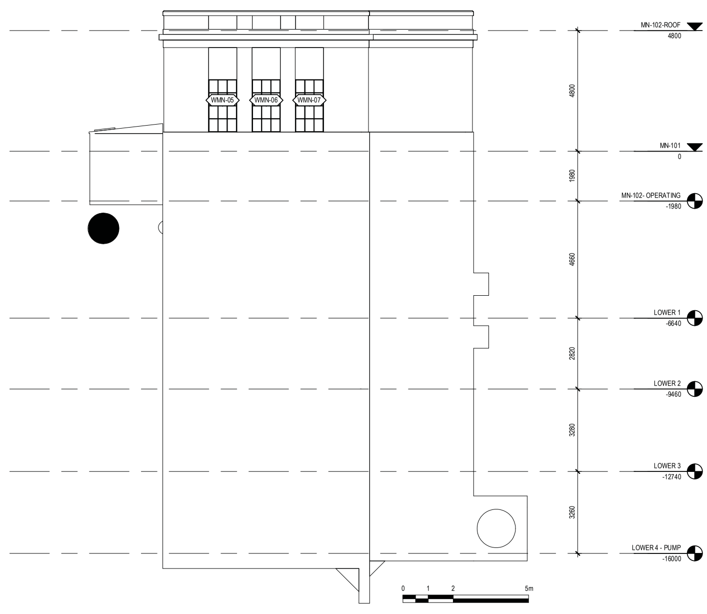
Description PUMP HOUSE #1 BUILDING RECORD

Drawing Title PLAN

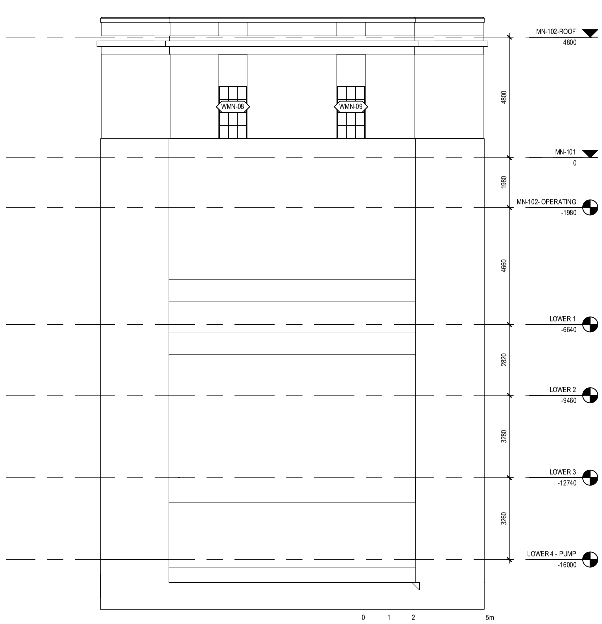
Discipline	HERITAGE	Drawn	KC
Volume		Drawing Number	
Sheet	H200		
File			



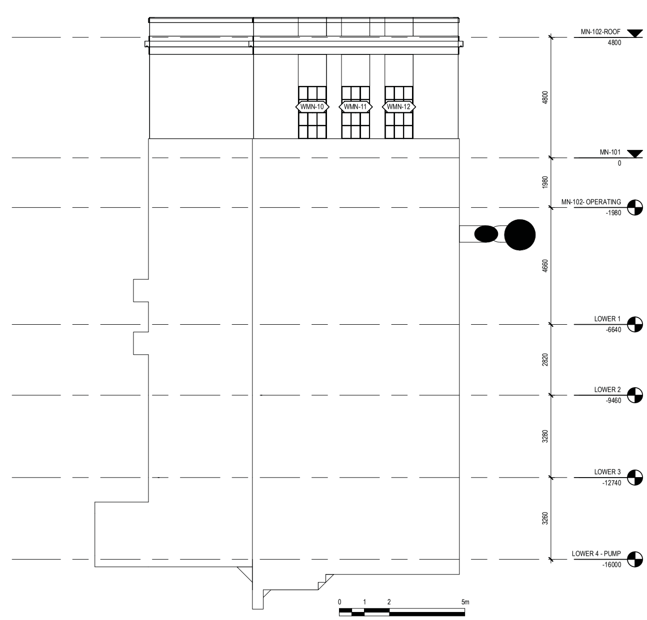
1 ELEVATION NORTH
1 : 100



2 ELEVATION EAST
1 : 100



3 ELEVATION SOUTH
1 : 100



4 ELEVATION WEST
1 : 100

0	CONCEPTUAL FINAL	30.04.21
A	PRELIM DRAFT FOR CLIENT	12.03.21

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ROSSDALE POWER PLANT PROJECT

BUILDING CODE COMPLIANCE - SCOPE DEFINITION

PROPOSED

SCOPE DEFINITION - FIRE SAFETY PROVISIONS

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SECTIONAL VIEW

DESIGNED BY: KD	DATE: 30/04/21	ISSUE: 0
DRAWN BY: KD	AUTHENTICATOR: DE	

SHEET No: 4C2006720
Rossdale_Power_Plant_Assessment-Rehab, Edmonton

MASKED REGION
PROJECTING SURFACE
CUT SURFACE

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ROSSDALE POWER PLANT ADVANCED ASSESSMENT AND PRIORITY REHABILITATION - HISTORIC BUILDING RECORD

CP-9496

Department INTEGRATED INFRASTRUCTURE SERVICES

No.	Description	Date
1	EXAMPLE	2021-01-13
2	DRAFT	2021-02-12
3	CORRECTION	2021-03-04

Location ID ROS108

Description PUMP HOUSE #1 BUILDING RECORD

Drawing Title EXTERIOR ELEVATIONS

Discipline	HERITAGE	Drawn	KC
Volume		Drawing Number	
Sheet	H300		
File			

D. Appendix D – Pump House #2

D.1. FIRE SAFETY PROVISION SKETCHES

DRAWING LIST	
Sheet Name	Sheet Number
PUMP HOUSE #2 TITLE SHEET	H000
SITE PLAN	H100
PLANS	H200
PLANS	H201
EXTERIOR ELEVATION	H300
INTERIOR ELEVATION	H600
INTERIOR ELEVATION	H601

HATCH LEGEND

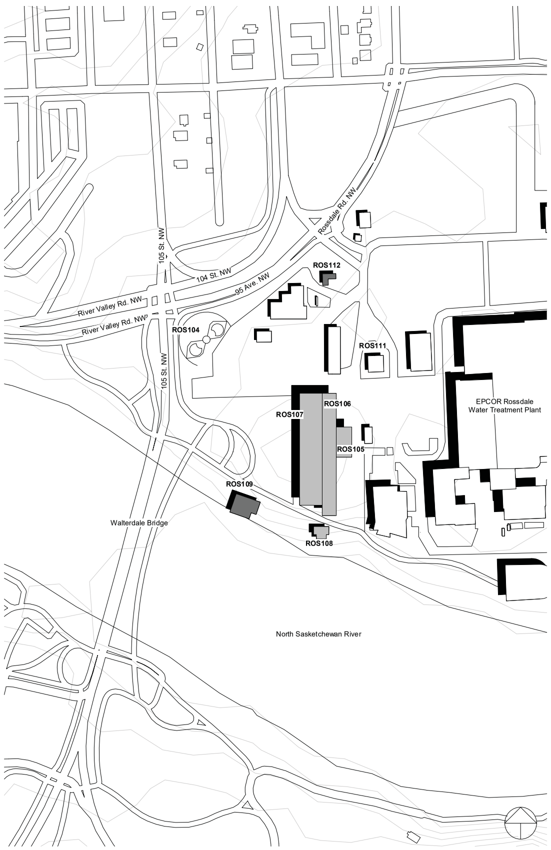
- METAL
- PLYWOOD
- OPEN TO BELOW
- MASKED REGION
- PROJECTING SURFACE
- CUT SURFACE

SITE PLAN BUILDING LIST

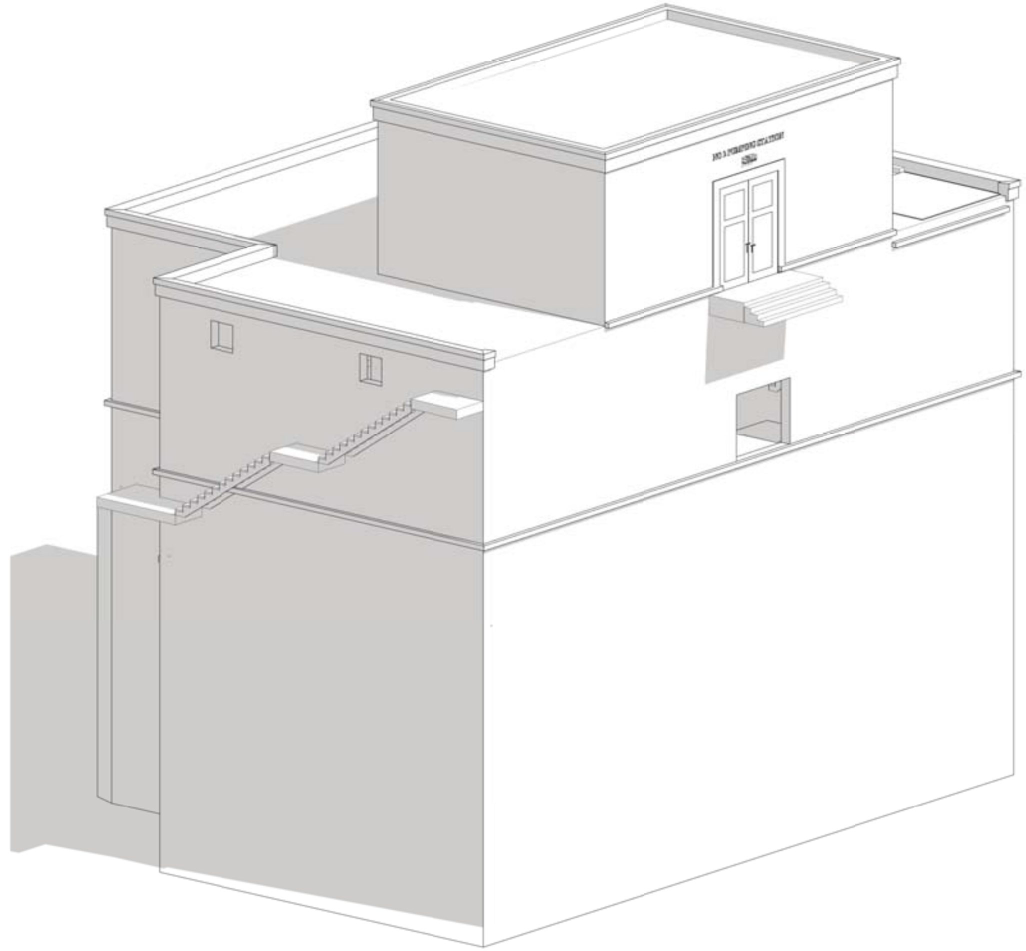
ROS104......Rossdale Burial Grounds
ROS105......Rossdale LP Power Plant - Switch House
ROS106......Rossdale LP Power Plant - Turbine Hall
ROS107......Rossdale LP Power Plant - Boiler Hall
ROS108......Rossdale Pump House #1
ROS109......Rossdale Pump House #2
ROS111......Rossdale EPCOR Administration Building
ROS112......Rossdale Power Plant ATCO Gas Building

SYMBOLS LEGEND

- NORTH ARROW
- INTERIOR ELEVATION MARKER (1 / A101)
- EXTERIOR ELEVATION MARKER
- SECTION HEAD
- LEVEL MARKER - BELOW GROUND (Name / Elevation)
- LEVEL MARKER - ABOVE GROUND (Name / Elevation)
- WINDOW TAG (101)
- DOOR TAG (101)
- ROOM TAG (1001)
- BREAK LINE



1 SITE PLAN
1 : 2500



2 PUMP HOUSE #2 NORTHEAST PERSPECTIVE

DRAWING SET NOTES

Pump House #2 was 2D drafted and 3D modelled in Revit 2020 using data from a variety of sources. The primary source of data was MiraCAD LiDAR scan data from September 16, 2020 and October 23, 2020.A point cloud was generated through terrestrial LiDAR scan data combined with aerial drone photogrammetry. Additional data for the Pump House #2 drawing set was gathered from DFS photography, MiraCAD photography, EPCOR'S Rossdale Generating Station (RGS) drawing database, and CADMapper.

Accuracy: 50 mm
Level of Development (LOD): 100

Missing Data from Point Cloud: Wet wells were not accessible for scanning. Point cloud data on south and east exterior elevations was limited.

Missing Data from 3D Revit Model: Structural, Mechanical, Electrical, Civil, and Landscape components have not been modelled.

Missing Data from 2D Revit Drawings: Structural, Mechanical, Electrical, Civil, and Landscape components have not been drafted.

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CONSULTANT PROJECT 20008

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Edmonton

ROSSDALE POWER PLANT ADVANCED ASSESSMENT AND PRIORITY REHABILITATION - HISTORIC BUILDING RECORD

CP-9496

Department: INTEGRATED INFRASTRUCTURE SERVICES

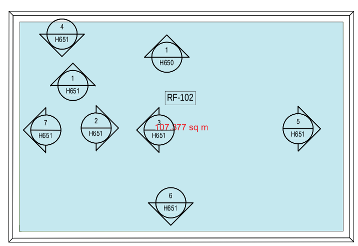
No.	Description	Date

Location ID

Description: PUMPHOUSE #2

Drawing Title: PUMP HOUSE #2 TITLE SHEET

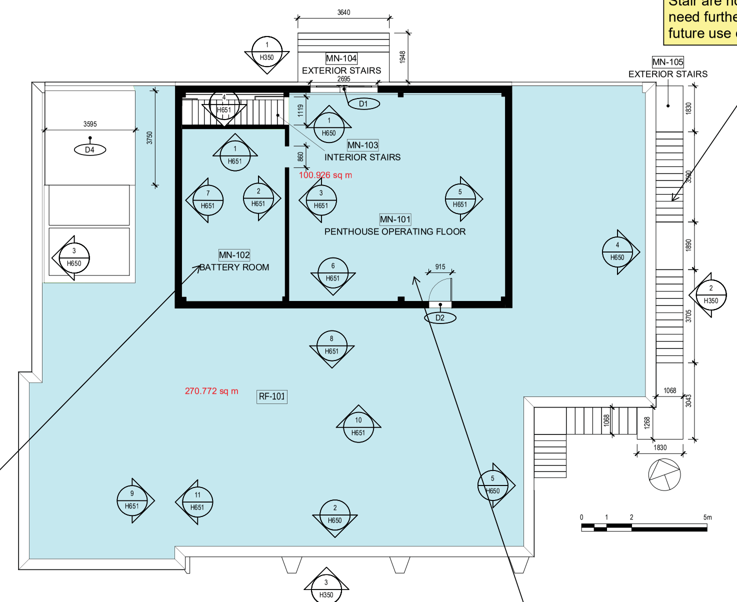
Discipline	HERITAGE	Drawn	KC
Volume		Drawing Number	
Sheet	H000		
File			



1 ROOF
1 : 100

FIRE SAFETY KEY

- 120 minute (Two-way) FRR Construction (indicative only subject to change).
- 60 minute (Two-way) FRR Construction (indicative only subject to change).
- 0 hr fire separation (indicative only subject to change).
- Travel distance is non-compliant with NBC(AE) Clause 3.4.2.5.(1)(f) (i.e. 30m), however, sprinklers would be required increasing travel distance to 45 m, client direction is required for pathway forward.
- 1.713 m — Travel Distance measurement.

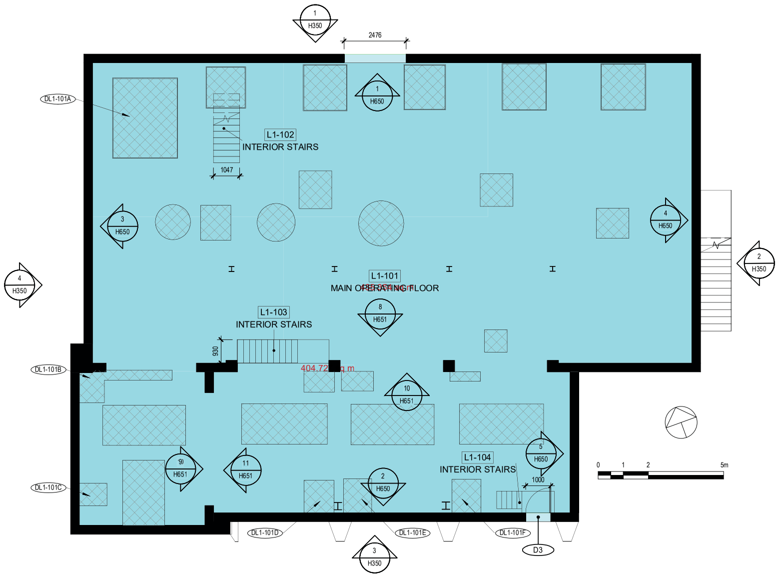


2 MN
1 : 100

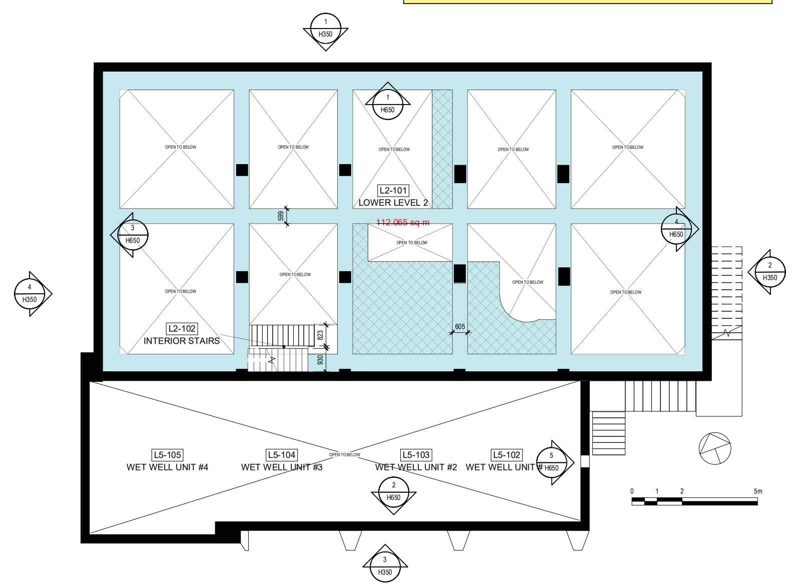
Stair are non-compliant and would need further analysis regarding the future use of these.

The application of Interconnected Floor Space is triggered, therefore the requirements of Articles 3.2.8.3. to 3.2.8.9. are required. Alternate performance-based approaches could be explored further and are listed within Table 9.1 of the report.

Exits (horizontal & vertical) are required throughout all levels in Pump House #2, refer to Section 11.6 (of the report) for maximum travel distance to exits requirements and Section 11.7 to understand the exiting width required from this building.



3 LOWER 1
1 : 100



4 LOWER 2
1 : 100

0	CONCEPTUAL FINAL	30.04.21
A	PRELIM DRAFT FOR CLIENT	12.03.21

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ROSSDALE POWER PLANT PROJECT

BUILDING CODE COMPLIANCE - SCOPE DEFINITION

PROPOSED

SCOPE DEFINITION - FIRE SAFETY PROVISIONS

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PUMP HOUSE #2 EXITING

KD 30/04/21 0
KD DE
4C2006720
Rossdale_Power_Plant_Assessment-Rehab, Edmonton

HATCH LEGEND

Consultant

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ROSSDALE POWER PLANT ADVANCED ASSESSMENT AND PRIORITY REHABILITATION - HISTORIC BUILDING RECORD

CP-9496

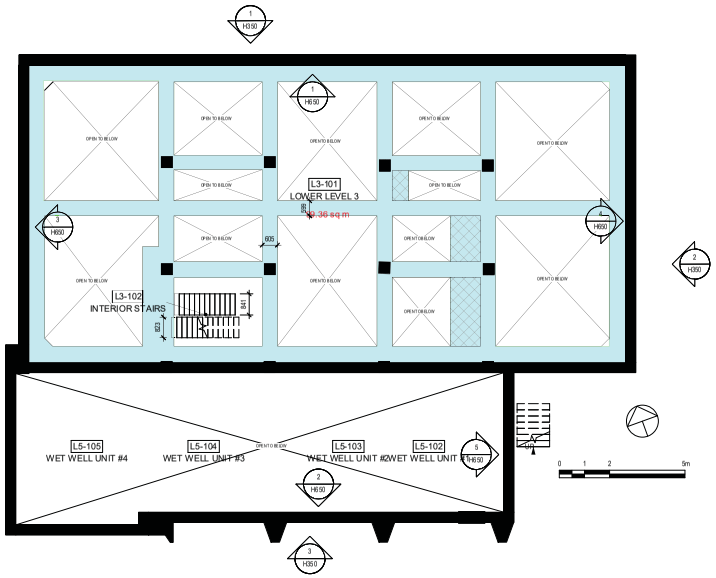
Department: INTEGRATED INFRASTRUCTURE SERVICES

No.	Description	Date
1	CONDITION ASSESSMENT	2021-02-11
2	CORRECTION	2021-02-24
3	CORRECTION	2021-03-03

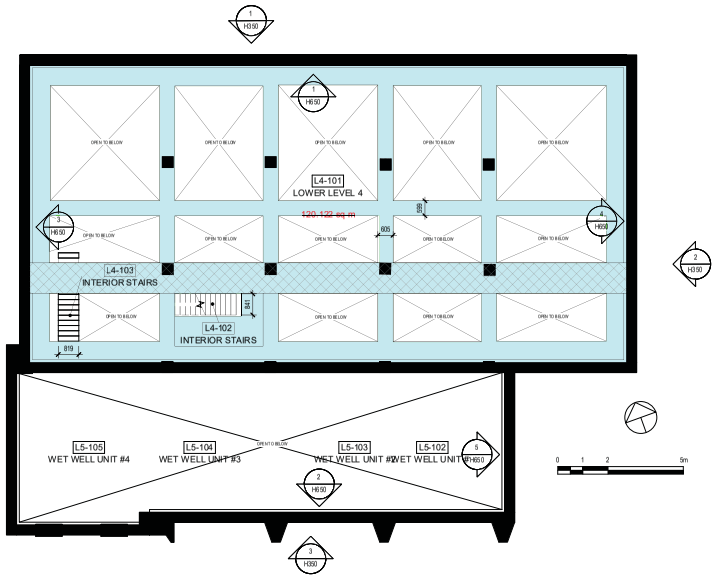
Location ID: ROS 109
Description: PUMPHOUSE #2

Drawing Title: PLAN

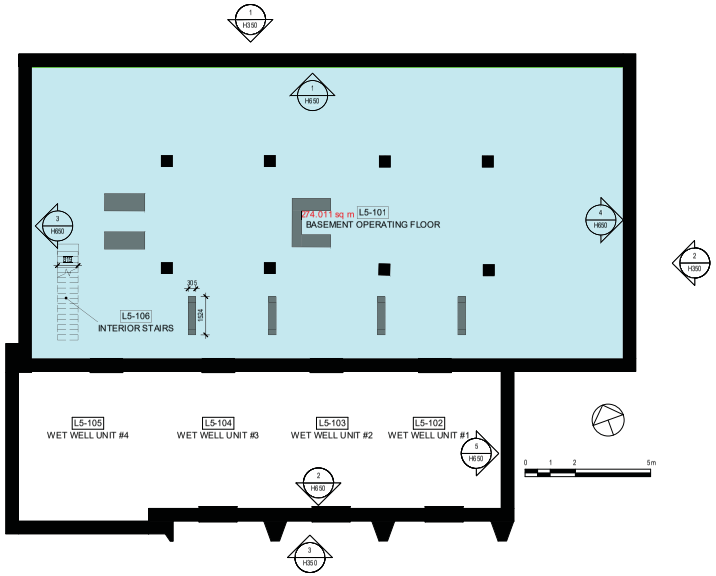
Discipline	HERITAGE	Drawn	K.C.
Volume		Drawing Number	
Sheet	H200		
File			



1 LOWER 3
1 : 100



2 LOWER 4
1 : 100



3 LOWER 5
1 : 100

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ROSSDALE POWER PLANT PROJECT

BUILDING CODE COMPLIANCE - SCOPE DEFINITION

PROPOSED

SCOPE DEFINITION - FIRE SAFETY PROVISIONS

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PUMP HOUSE #1 EXITING

Drawn	KD	30/04/21	
Checked	KD	DE	0
Job No.	4C2006720		
File No.	Rossdale_Power_Plant_Assessment-Rehab, Edmonton		

HATCH LEGEND

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ROSSDALE POWER PLANT
ADVANCED ASSESSMENT AND PRIORITY REHABILITATION - HISTORIC BUILDING RECORD

CP-9496

Department INTEGRATED INFRASTRUCTURE SERVICES

No.	Description	Date
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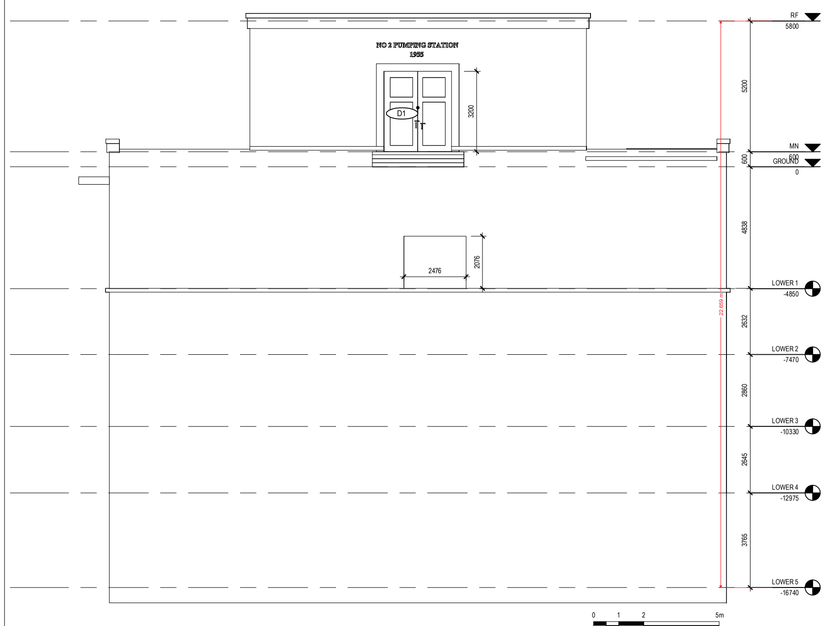
2	CORRECTION	2021-02-24
3	CORRECTION	2021-03-03

Location ID ROS 109

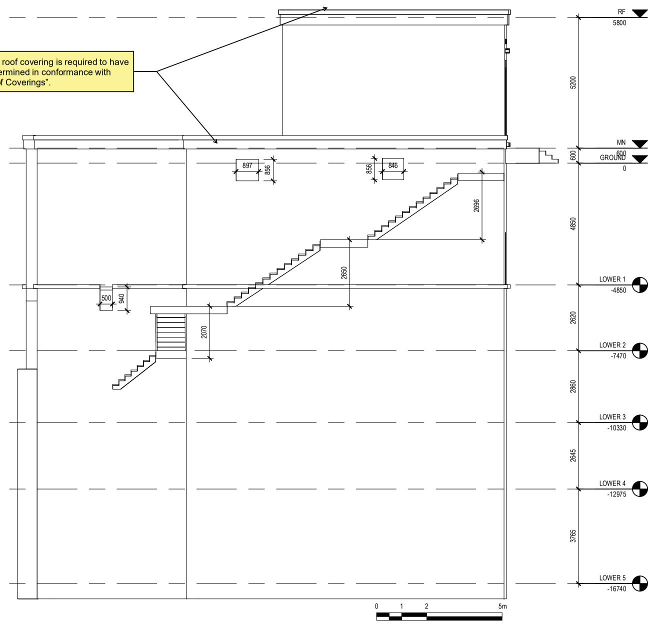
Description PUMPHOUSE #2

Drawing Title PLAN

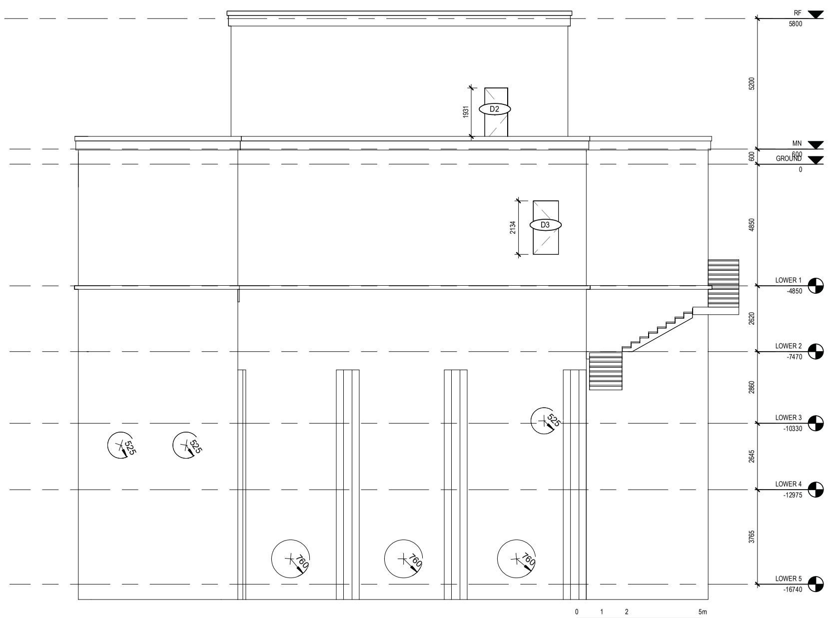
Discipline	HERITAGE	Drawn	K.C.
Volume		Drawing Number	
Sheet	H201		
File			



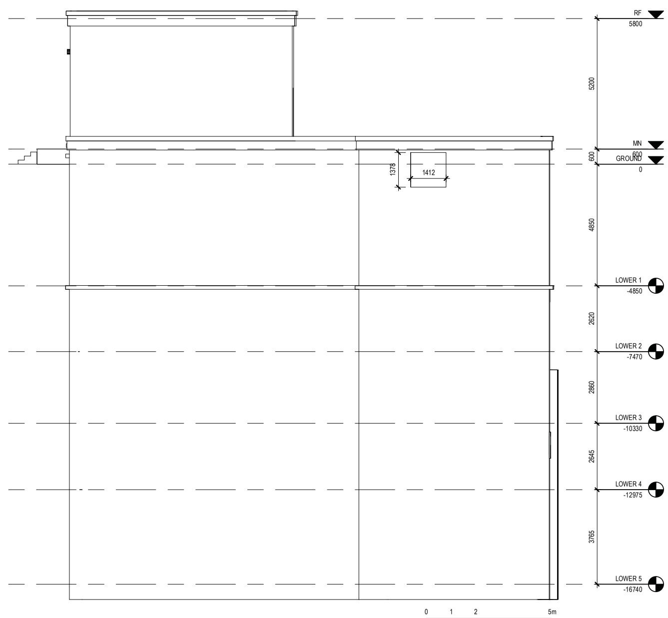
1 NORTH ELEVATION
1 : 100



3 EAST ELEVATION
1 : 100



2 SOUTH ELEVETION
1 : 100



4 WEST ELEVATION
1 : 100

HATCH LEGEND
- METAL
- PLYWOOD
- OPEN TO BELOW
- MASKED REGION
- PROJECTING SURFACE
- CUT SURFACE

0	CONCEPTUAL FINAL	30.04.21
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ROSSDALE POWER PLANT PROJECT

BUILDING CODE COMPLIANCE - SCOPE DEFINITION

PROPOSED

SCOPE DEFINITION - FIRE SAFETY PROVISIONS

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PUMP HOUSE #1 EXITING

DESIGNED BY: KD | DATE: 30/04/21 | ISSUE: 0
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SHEET No: 4C2006720
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ROSSDALE POWER PLANT ADVANCED ASSESSMENT AND PRIORITY REHABILITATION - HISTORIC BUILDING RECORD

CP-9496

Department: INTEGRATED INFRASTRUCTURE SERVICES

No.	Description	Date
1	CONDITION ASSESSMENT	2021-02-11
2	CORRECTION	2021-02-24
3	CORRECTION	2021-03-03

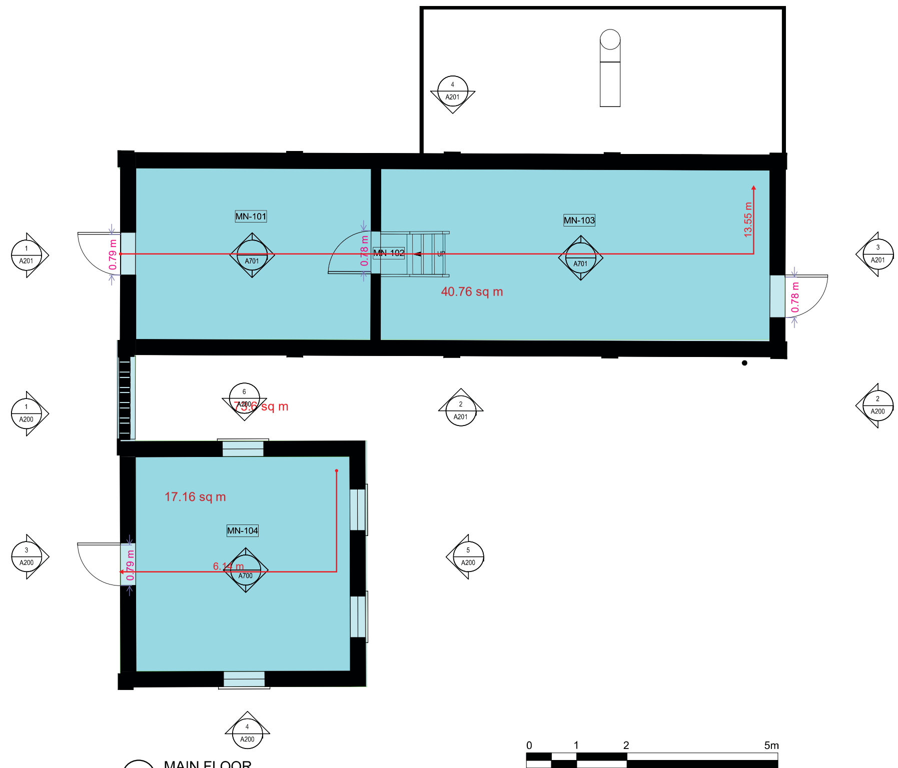
Location ID: ROS109
Description: PUMPHOUSE #2

Drawing Title: EXTERIOR ELEVATION

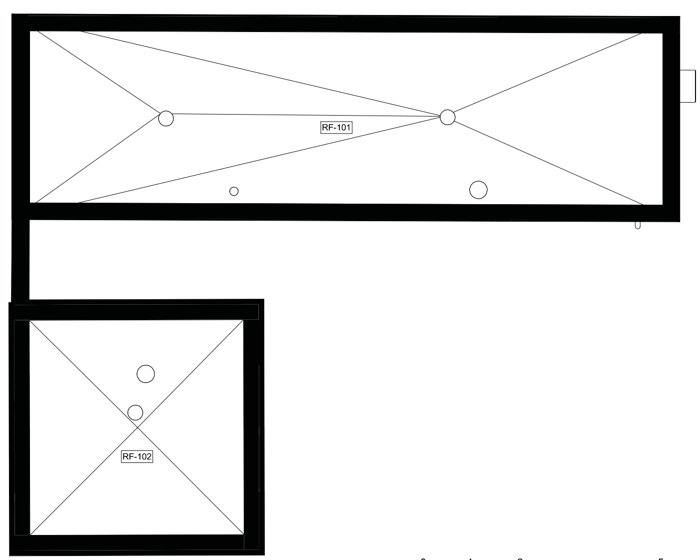
Discipline	HERITAGE	Drawn	K.C.
Volume		Drawing Number	
Sheet	H300		
File			

E. Appendix E – ATCO Gas Building

E.1. FIRE SAFETY PROVISION SKETCHES



1 MAIN FLOOR
1 : 50



0 1 2 5m

2 U/S ROOF
1 : 50

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SCOPE DEFINITION - FIRE SAFETY PROVISIONS

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ROSSDALE POWER PLANT ADVANCED ASSESSMENT AND PRIORITY REHABILITATION - HISTORIC BUILDING RECORD

CP-9496

Department INTEGRATED INFRASTRUCTURE SERVICES

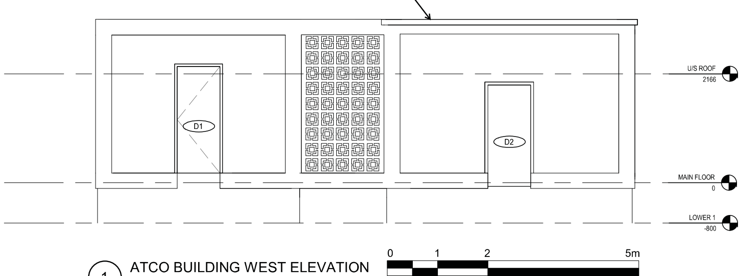
No.	Description	Date

Location ID
Description

Drawing Title
ATCO PLANS

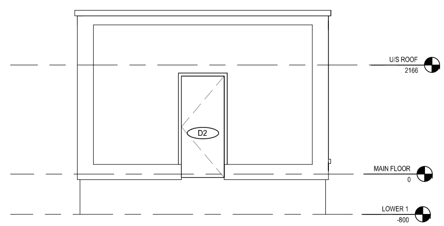
Discipline	Drawn
Volume	
Sheet A100	Drawing Number
File	

As per Sentence 3.1.15.2.(1) every roof covering is required to have a Class A, B or C classification determined in conformance with CAN/ULC-S107, "Fire Tests of Roof Coverings".



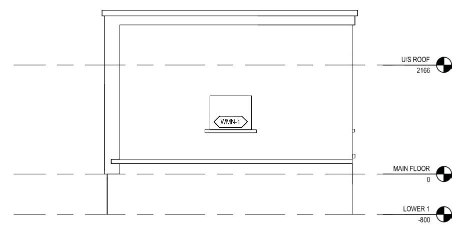
1 ATCO BUILDING WEST ELEVATION
1 : 50

2 ATCO BUILDING EAST ELEVATION
1 : 50



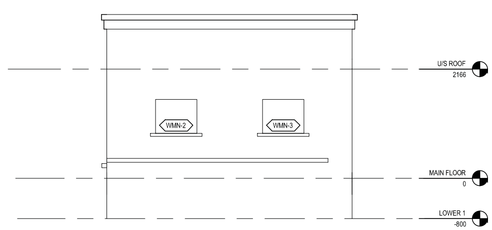
3 GAS METERING HOUSE WEST ELEVATION
1 : 50

0 1 2 5m



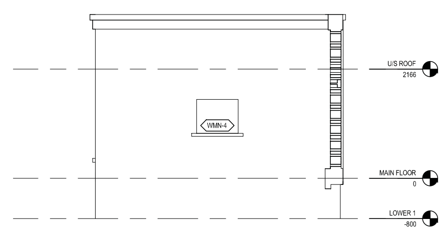
4 GAS METERING HOUSE SOUTH ELEVATION
1 : 50

0 1 2 5m



5 GAS METERING HOUSE EAST ELEVATION
1 : 50

0 1 2 5m



6 GAS METERING HOUSE NORTH ELEVATION
1 : 50

0 1 2 5m

0	CONCEPTUAL FINAL	30.04.21
A	PRELIM DRAFT FOR CLIENT	12.03.21

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JENSEN HUGHES
Advancing the Science of Safety

ROSSDALE POWER PLANT PROJECT

BUILDING CODE COMPLIANCE - SCOPE DEFINITION

PROPOSED

SCOPE DEFINITION - FIRE SAFETY PROVISIONS

ISSUED FOR INFORMATION ONLY

ATCO SECTIONAL VIEW

KD 30/04/21 0
KD DE
4C2006720
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Consultant

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ROSSDALE POWER PLANT ADVANCED ASSESSMENT AND PRIORITY REHABILITATION - HISTORIC BUILDING RECORD

CP-9496

Department INTEGRATED INFRASTRUCTURE SERVICES

No.	Description	Date

Location ID

Description

Drawing Title
ATCO EXTERIOR ELEVATIONS

Discipline		Drawn
Volume		Drawing Number
Sheet	A200	
File		

F. Appendix F – Accessibility Code Compliance

F.1. ACCESSIBILITY CODE COMPLIANCE REPORT

ACCESSIBILITY CODE COMPLIANCE

1.0 Introduction

The purpose of this preliminary accessibility analysis is to identify the major accessibility issues and upgrade required to ensure the Rossdale Power Plant is compliant with the National Building Code of Canada – 2019 Alberta Edition (NBC 2019 AE) and Version 3 of the City of Edmonton Access Design Guide.

The interior and exterior accessibility site review was conducted at the Rossdale Power Plant on 27 February 2021. This accessibility review consisted of a walk-through of the interior and exterior areas of the project site. A summary of areas / buildings reviewed are defined in Section 1.1 of this report (Building Code section).

2.0 Accessibility Methodology

The review process was based on a level of accessibility compliance that meets the NBC 2019 AE and Version 3 of the City of Edmonton Access Design Guide.

The following building system and elements were reviewed while on site:

- interior
  - barrier-free path of travel,
  - doorways and hardware,
  - raised floor areas,
  - elevating devices,
  - guards,
  - stairs,
  - handrails, and
  - washrooms / showers,
- exterior,
  - exterior path of travel,
  - parking lot,
  - accessible routes within the property to the building,
  - accessible routes to the building entrances, and
  - signage.

3.0 Limitations

3.1 GENERAL LIMITATIONS

The observations made in this report pertain only to the spaces reviewed. It should not be construed that these observations apply to other similar spaces located within the project site.

3.2 NATIONAL BUILDING CODE OF CANADA – 2019 ALBERTA EDITION

This report does not overview all areas of Code compliance with respect to barrier-free design requirements contained in the NBC 2019 and Version 3 of the City of Edmonton. This report solely addresses existing non-compliant conditions and required design modifications required for the proposed occupancies in the buildings. Based on information provided by the Client, it is understood that Group A, Division 3, “Assembly”, Group B, “Care, Treatment and Detention”, Group C, “Residential” and Group F, “Low-, Medium- and High-Hazard Industrial” occupancies are not being considered for the project at this time.

4.0 Applicable Accessibility Requirements

4.1 GENERAL

This Section is broken down by category which references the NBC 2019 AE requirements, the Version 3 City of Edmonton Access Design Guide requirements, and the existing site conditions for each building with proposed design modifications for specific occupancy types.

It should be noted that while on site, lighting could not be reviewed during the time of day. However, due to the age of the building, lighting appears to be insufficient and should be further reviewed.

4.2 BARRIER-FREE ENTRANCES

Table 4-1: Requirements for Barrier-Free Entrances

NBC 2019 AE	City of Edmonton Access Design Guide
Sentence 3.8.2.2.(1) **In addition to the barrier-free entrances required by Sentence (2), not less than 50% of the pedestrian entrances, including the primary entrance, of a building referred to in Sentence 3.8.2.1.(1), including exterior walks leading to the entrances from a public thoroughfare and from on-site parking areas, shall be barrier-free.**	E.1.1 Every entrance intended to be used by the public or by employees shall be barrier-free accessible. E.1.2 All barrier-free entrances must be easily identifiable. Design consideration should include mitigation of seasonal weather conditions, such as strong winds and drifting snow, to ensure normal operation of entrance doors in all weather.
Sentence 3.8.2.2.(2) **A suite of assembly occupancy, business and personal services occupancy or mercantile occupancy that is located in the first storey of a building, or in a storey to which a barrier-free path of travel is provided, and that is completely separated from the remainder of the building so that there is no access to the remainder of the building, shall have at least one barrier-free entrance.**	E.1.3 In an existing building, a sign with both visual and tactile lettering shall be installed far ahead of any obstruction at all non barrier-free entrances, to clearly indicate the location of the barrier-free entrance. E.1.4 Drainage shall be directed away from the entrance.
	E.1.5 All barrier-free entrances shall be provided with power door operators. Best practice is to provide automatic sliding doors. E.1.6 If an entrance has a power door operator, and there is a vestibule immediately inside the doors, the vestibule doors shall also be equipped with a power door operator.
	E.1.7 Power door operator push buttons shall be installed at 1000 +/- 100 mm above the finished floor, measured to the centre line of the device. Wave to open sensors are preferred in interior locations. E.1.8 Barrier-free entrance doors shall have a large well marked push button that is easily visible.
	E.1.9 Power door operators shall be located on a wall or post 1500 mm minimum distance back from the door if it swings outward on approach to the entry so it may not impede the mobility or safety of a person using a wheelchair or other mobility device. E.1.10

NBC 2019 AE	City of Edmonton Access Design Guide
	If two doors are located side by side, use signage to indicate which door opens by the power operator.
	E.1.11 If doors are not equipped with power door operators in an existing building, doors shall be lightweight and easy to pull / push.
	E.1.13 Door release hardware shall be installed between 900 mm and 1065 mm above the finished floor. E.1.14 In any set of two or more doors or gates side by side, the door opening shall alternate between right and left hand operations to allow a choice depending on the ability of the user.
	E.1.17 Door, threshold and door frames shall have colour contrast with floor and wall surface for easy identification. E.1.18 Entrances are vestibules should be well lit.

4.2.1 Low Pressure Plant

Existing Condition

The following describes the existing conditions of the entrance to the Low-Pressure Plant (Switch House entrance) on the day of the site visit:

- the entrance provided on the east side of the building via multiple steps,
- a ramp is not currently provided for wheelchair users,
- no handrails provided on either side of the stairs,
- no tactile attention indicators provided on steps,
- no signage or features are present to indicate this area as an entrance, and
- the path is full of ice / snow creating a hazard.

Required Modifications

Based on the above requirements, this entrance is not barrier-free accessible. Since this entrance is accessed from the exterior parking lot, it is required to be designed as the principal entrance to the building which is required to be barrier-free accessible.

Appropriate signage and barrier-free features outlined in the Table 4.2 are required to be provided for this entrance. In addition, the entrance doors are required to be replaced with latching doors that are equipped with a power door operator. Since two door leafs are provided, signage indicating which door is operable by the power door operator is required to be provided.

4.2.2 Pumphouse No. 1

Existing Condition

The following describes the existing conditions of Pumphouse No.1 on the day of the site visit:

- access to building entrance on exterior from the north side of the building on a leveled surface, and
- access to building entrance provided with snow / ice accumulation.

Note that at the time of our site review the entrance to the building was secured by gates and could not be reviewed in detail.

Required Modifications

Based on the above requirements, this entrance is not barrier-free accessible. Since this is the only pedestrian entrance into the building, it is required to be designed as the principal entrance to the building which is required to be barrier-free accessible.

Appropriate signage and barrier-free features outlined in the Table 4.2 are required to be provided for this entrance. In addition, the entrance doors are required to be replaced with latching doors that are equipped with a power door operator. Since two door leafs are provided, signage indicating which door is operable by the power door operator is required to be provided.

4.2.3 Pumphouse No. 2

Existing Condition

The following describes the existing conditions of Pumphouse No.2 on the day of the site visit:

- access to building entrance on exterior from the north side of the building via multiple steps,
- steps to building entrance provided with snow / ice accumulation,
- no alternative method of entry (i.e., ramp), and
- (rusted) handrails located far apart with no intermediate handrail provided in between.

Required Modifications

Based on the above requirements, this entrance is not barrier-free accessible. Since this is the only pedestrian entrance into the building, it is required to be designed as the principal entrance to the building which is required to be barrier-free accessible.

Appropriate signage and barrier-free features outlined in the Table 4.2 are required to be provided for this entrance. In addition, the entrance doors are required to be replaced with latching doors that are equipped with a power door operator. Since two door leafs are provided, signage indicating which door is operable by the power door operator is required to be provided.

4.2.4 ATCO Gas Building

Existing Condition

The following describes the existing condition of the ATCO Gas building entrance:

- a paved path is not provided from the roadway to the main entrance of the building (only a cement slab is provided on top of grass),
- a step is provided at the entrance to get into the building, and
- no alternative feature (i.e., ramp / sloped floor) provided to enter the building.

Required Modifications

Based on the above requirements, this entrance is not barrier-free accessible. Since this is the only pedestrian entrance into the building, it is required to be designed as the principal entrance to the building which is required to be barrier-free accessible.

Appropriate signage and barrier-free features outlined in the Table 4.2 are required to be provided for this entrance. In addition, the entrance door is required to be equipped with a power door operator. For ease of access, a paved pathway should be provided from the roadway / lot to the entry as pedestrians should not have to walk on grass to enter a building.

4.3 BARRIER-FREE PATH OF TRAVEL (EXTERIOR)

Table 4-2: Requirements for an Exterior Barrier-Free Path of Travel

NBC 2019 AE	City of Edmonton Access Design Guide
Sentence 3.8.3.3.(1) **Exterior walks that form part of a barrier-free path of travel shall** **a) have a slip-resistant, continuous and even surface,** **b) be not less than 1100 mm wide,**	D.1.1 Exterior barrier-free paths of travel shall be minimum 1800 mm wide and the slope shall not exceed 1:20. If the slope exceeds 1:20, refer to Section D.7 Ramps for design parameters.

NBC 2019 AE	City of Edmonton Access Design Guide
c) have a level area conforming to Clause 3.8.3.5.(1)(c) adjacent to an entrance doorway, **d) have a curb not less than 75 mm high wherever there is a vertical drop more than 75 mm from the walk surface and there is no wall, railing, or other barrier to provide protection,** **e) have a surface not less than 1100 mm wide of a different texture and contrasting in colour to that surrounding it, if the path of travel is level and even with adjacent surfaces,** **f) be free of obstructions for the full width of the walk to not less than 1980 mm high, except that handrails are permitted to project not more than 100 mm from either or both sides into the clear area, and** **g) be designed as a ramp where the slope of the walk is more than 1 in 20.**	

4.3.1 Low Pressure Plant

Existing Condition

The Low-Pressure Plant and associated buildings (Switch House, Turbine Hall and Boiler Hall) are not provided with an adequate barrier-free path of travel from the exterior parking lots to the main entrance of the building. The Switch House entrance is provided with steps and no alternative measure (i.e., ramp / sloped floor).

Required Modifications

Based on the requirements listed in Table 4.3, the exterior walkway will require a barrier-free ramp with handrails and will be required to kept clear of snow / ice accumulation to prevent a hazard. In addition, a clear 1800 mm width is required to be provided for this ramp to the main entrance. Since there is a change in direction to access the building entrance doors, the ramp will require a clear level space (1500 mm x 1500 mm) at the point of change in direction in accordance with D.7.4.

4.3.2 Pumphouse No.1

Existing Condition

Access to the building entrance from the exterior is at a leveled surface. Review of surface could not be -performed on site as snow covered the surface.

Required Modifications

Based on the requirements listed in Table 4.3, an 1800 mm path of travel is required to be maintained from the sidewalk to the building entrance. When the pathway is clear of snow / ice, the surface is required to be of a different colour contrasting texture.

4.3.3 Pumphouse No.2

Existing Condition

Access to the building entrance from the exterior is via multiple steps.

Required Modifications

As this does not provide barrier-free access into the building, an alternative method (i.e., ramp) is required to be provided for wheelchair users. The ramp is required to be designed in accordance with Article 3.8.3.5 and D.7. In addition, the ramp is required to be slip-resistant and kept clear of snow / ice accumulation.

4.3.4 ATCO Gas Building

Existing Condition

Access to the building entrance from the exterior is via grass – no paved path is provided.

Required Modifications

The exterior path to the building entrance is required to be designed in accordance with Sentence 3.8.3.3.(1) outlined in Table 4.3.

4.4 TACTILE WALKING SURFACE INDICATORS

Table 17-3: Requirements for Tactile Walking Surface Indicators

NBC 2019 AE	City of Edmonton Access Design Guide
Sentence 3.8.3.2.(5) **In a barrier-free path of travel, a downward change in elevation shall be signaled by the use of a 600 mm wide tactile warning strip placed 250 mm from the edge and for the full width of a stair, escalator, moving walk, ramp or platform, and identified using colour and brightness contrast.**	D.2.1 Tactile Walking Surface Indicators (TWSIs) shall have a texture that can be felt underfoot and detected by a long cane. D.2.2 TWSIs shall have beveled edges to decrease the likelihood of tripping and provide an adequate amount of space between each truncated dome to provide smooth moving for people who use wheelchairs and mobility scooters.
	D.2.3 Ensure colour contrast of TWSI with the surrounding walking surface. D.2.4 Attention TWSIs shall be set across the entire width of a blended curb's edge (exclusive of flares) and set back 150 mm to 200 mm from the curb's edge, and they shall extend a minimum depth of 610 m in the direction of travel.
	D.2.5 When guidance TWSIs are installed, the base surface shall be less than 3 mm above the surrounding ground or floor surface, so they do not create a tripping hazard. D.2.6 TWSs shall always be adhered firmly so there is no likelihood of the edges lifting.

4.4.1 Low Pressure Plant

Existing Condition

The exterior steps or landings where there is a change in direction are not provided with tactile strips.

Required Modifications

The existing steps and the ramp to be provided towards the building entrance are required to be provided with tactile strips in accordance with the requirements listed in Table 4.4.

4.4.2 Pumphouse No.1

As Pumphouse No.1 is not provided with a change in elevation at the exterior, this Section is not applicable.

4.4.3 Pumphouse No.2

Existing Condition

The exterior steps or landings where there is a change in direction are not provided with tactile strips.

Required Modifications

The existing steps and the ramp to be provided towards the building entrance are required to be provided with tactile strips in accordance with the requirements listed in Table 4.4.

4.4.4 ATCO Gas Building

As the ATCO Gas building is not provided with a change in elevation at the exterior, this Section is not applicable.

4.5 CURB RAMPS

Table 4-4: Requirements for Curb Ramps

NBC 2019 AE	City of Edmonton Access Design Guide
N/A	D.3.1 Curb ramps shall be installed wherever an exterior barrier-free path of travel encounters a curb, such as at a roadway. D.3.2 Curb ramps shall be aligned to be across from each other to ensure a direct pedestrian path of travel.
	D.3.7 In designated parking areas, curb ramps shall be located in the access aisle or to the side of or adjacent to the designated stall. If it is a parallel parking space, the curb ramp shall be located behind or in front of the designated stall. D.3.8 Curb ramps shall contrast in colour and include TWSIs to provide contrast from the surrounding sidewalk and road.
	D.3.9 Drainage should be designed to prevent water and snow accumulation at the bottom of curb ramps. Ensure catch basis are not located in front of curb ramps.

4.5.1 Low Pressure Plant

Existing Condition

There are currently no walkways that encounter a curb for the use of curb ramps for this building.

Required Modifications

Should the exterior lot be provided with curbs adjacent to the roadway leading to the parking lot, curb ramps are required to be provided in accordance with the requirements listed under Table 4.5.

4.5.2 Pumphouse No.1

Since Pumphouse No.1 is located adjacent to a sidewalk, there is no need for the use of curb ramps. As such, this Section is not applicable.

4.5.3 Pumphouse No.2

Since Pumphouse No.2 is located adjacent to a sidewalk, there is no need for the use of curb ramps. As such, this Section is not applicable.

4.5.4 ATCO Gas Building

Existing Condition

There are currently no walkways that encounter a curb for the use of curb ramps for this building.

Required Modifications

Since a walkway is required to be provided and it will be located adjacent to the roadway leading up to site, curb ramps are required to be provided in accordance with the requirements listed under Table 4.5.

4.6 OBSTRUCTIONS

Table 4-5: Requirements for Exterior Obstructions

NBC 2019 AE	City of Edmonton Access Design Guide
*** See Clause 3.8.3.3.(1)(f) in Table 4.3**	D.5.1 Any obstructions such as lamp posts, tree hates, trees, signposts, transformers, mailboxes, newspaper stands, trash containers, planers, bus shelters, benches, “sandwich board” signs, and bike racks shall be placed in the furnishing zone outside the minimum required width of the barrier-free shared pathway. Bike racks shall be placed to avoid locked bikes protruding into the minimum required width. D.5.2 Wherever a furnishing zone or shared use space is located, a different material of colour contrast and texture shall be provided for the furnishing zone or a tactile warning strip of minimum 600 mm width shall be provided along the barrier-free path of travel.
	D.5.3 Objects taller than 680 mm and protruding into a barrier-free path of travel more than 100 mm from the wall shall extend to within 100 mm from the floor or ground for the entire length of the obstruction, in order to be cane detectable.

There are currently no obstructions located within any of the exterior paths of travel in the building. Should any of the above-mentioned items be proposed on site, they are required to be located so as to not obstruct a barrier-free path of travel. These site components are required to be located so that they are clearly visible and identifiable to pedestrians walking around the exterior of the site.

4.7 RAMPS

Table 4-6: Requirements for Barrier-Free Ramps

NBC 2019 AE	City of Edmonton Access Design Guide
Sentence 3.8.3.5.(1) **A ramp located in a barrier-free path of travel shall** **a) have a clear width of not less than 870 mm,** **b) have a slope not more than 1 in 12,** **c) have a level area not less than 1500 by 1500 mm at the top and bottom and at intermediate levels of a ramp leading to a door, so that on the latch side the level area extends not less than** **i) 600 mm beyond the edge of the door opening where the door opens towards the ramp, or** **ii) 300 mm beyond the edge of the door opening where the door opens away from the ramp,** **d) have a level area not less than 1200 mm long and at least the same width as the ramp at intervals not more than 9 m along its length,** **e) except as provided in Sentences (2) and (3), be equipped with handrails conforming to Article 3.4.6.5., except that they shall be not less than 865 mm and not more than 965 mm high,** **f) be equipped with guards conforming to Article 3.4.6.6.,** **g) have a level area not less than 1200 by 1200 mm where a ramp makes a 90-degree turn, and** **h) have a level area not less than 1500 mm wide that extends to not less than the outer edge of each ramp section, where a ramp makes a 180-degree turn.**	D.7.1 Exterior ramps shall be protected from rain, snow and ice, or maintained free of now ice through appropriate heating and drainage systems installed beneath the ramp surface, where possible. D.7.2 Ensure separate stair and ramp access are provided for the same path of travel. D.7.3 Non-glare materials shall be used on the ramp surface. D.7.4 Width of ramp shall not be less than 1500 mm. D.7.5 All landings shall be a minimum of 1500 mm long x 1500 mm size. D.7.6 TWSI of colour contrast shall be provided to mark the beginning and ending of all ramps and also landings.
Sentence 3.8.3.5.(4) **The surfaces of ramps and landings shall** **a) be hard and resilient where the ramp is steeper than 1 in 15,** **b) have a cross slope no steeper than 1 in 50, and** **c) where exposed to water, be designed to drain.**	D.7.7 Curbs combined with handrails and guards can be used to prevent people using wheelchairs or other mobility aids from accidentally going over the edge of a ramp. D.7.8 The maximum cross slope of ramp surfaces shall be 1:50 (2%).
Sentence 3.8.3.5.(5) **Ramps and landing not at grade or adjacent to a wall shall have edge protection consisting of** **a) a curb not less than 75 mm high, or** **b) a raised barrier or rail located not more than 100 mm from the ramp or landing surface.**	
Sentence 3.8.3.5.(6)	

NBC 2019 AE	City of Edmonton Access Design Guide
Floors or walks in a barrier-free path of travel having a slope steeper than 1 in 20 shall be designed as ramps.	

4.7.1 Low Pressure Plant

Existing Condition

Ramps are not currently provided at the exterior of the building.

Required Modifications

As mentioned in Section 4.3 of this report, a barrier-free ramp is required to be provided at the exterior steps leading up to the main entrance to allow access for wheelchair / mobility aid users. This ramp is required to be designed in accordance with the requirements listed in Table 4.7.

It should be noted that the Turbine Hall and Boiler Hall are provided with separate exterior stairs for building access. These areas are also required to be provided with a barrier-free ramp or elevating device. See Section 4.16 of this report.

4.7.2 Pumphouse No.1

As there is no change in elevation at the exterior portion of Pumphouse No.1, this Section is not applicable.

4.7.3 Pumphouse No.2

Existing Condition

Ramps are not currently provided at the exterior of the building.

Required Modifications

As mentioned in Section 4.3 of this report, a barrier-free ramp is required to be provided at the exterior steps leading up to the main entrance to allow access for wheelchair / mobility aid users. This ramp is required to be designed in accordance with the requirements listed in Table 4.7.

4.7.4 ATCO Gas Building

As there is no change in elevation at the exterior portion of Pumphouse No.1, this Section is not applicable.

4.8 STAIRS

Table 17-7: Requirements for Exterior Stairs

NBC 2019 AE	City of Edmonton Access Design Guide
N/A	D.8.1 Exterior stairs hall be protected from rain. Snow and ice or maintained free of snow and ice through regular maintenance or appropriate heating and drainage systems installed beneath the stair surface. D.8.2 Stair nosings and leading edges of landings shall have a tactile finish with colour contrast and distinctive pattern to demarcate the leading edge of the tread and landing. D.8.3 Risers shall be beveled not more than 60-degrees with respect to the tread surface to ensure the tread edge is clearly visible in descent. D.8.4 Changes in elevation at stairwells shall be indicated by a TWSI, which is as wide as the stair and has colour contrast.

4.8.1 Low Pressure Plant

Existing Condition

The entry points to the Low Pressure Plant (including the Switch House, Boiler Hall and Turbine Hall) are provided with stairs for access into the building. The following describes the existing conditions of the stairs:

- one flight of stairs consists of open risers and rusted treads, and
- no tactile strips on stair nosings.

Required Modifications

These exterior stairs are required to be designed in accordance with the requirements listed in Table 4.8.

4.8.2 Pumphouse No.1

Stairs are not provided at Pumphouse No.1 and as such, this Section is not applicable.

4.8.3 Pumphouse No.2

Existing Condition

The entry point to Pumphouse No.2 consists of approximately 4-5 risers with no tactile strips.

Required Modifications

These exterior stairs are required to be designed in accordance with the requirements listed in Table 4.8.

4.8.4 ATCO Gas Building

Stairs are not provided at Pumphouse No.1 and as such, this Section is not applicable.

4.9 HANDRAILS

Table 17-8: Requirements for Exterior Handrails

NBC 2019 AE	City of Edmonton Access Design Guide
N/A	D.9.1 Handrail material shall be splinter and rust proof. D.9.2 Safety should be a consideration in the spacing of balusters. D.9.3 Where guardrails are provided at viewing platforms, provide additional handrails between 865 mm and 1070 mm height from the ground as stability for less able users, ensuring placement does not obstruct sightlines for people use wheelchairs.

4.9.1 Low Pressure Plant

Existing Condition

Handrails are not currently provided at the Switch House building entry.

Handrails are provided at the additional entries to the building (i.e., Turbine Hall and Boiler Hall). The handrails for these stairs are currently rusted.

Required Modifications

Rusted handrails are required to be replaced.

4.9.2 Pumphouse No.1

There are no handrails provided at the exterior of Pumphouse No.1 and as such, this Section is not applicable.

4.9.3 Pumphouse No.2

Required Condition

Handrails are not currently provided at the Switch House building entry.

Handrails are provided at the additional entries to the building (i.e., Turbine Hall and Boiler Hall). The handrails for these stairs are currently rusted.

Required Modifications

Rusted handrails are required to be replaced.

4.9.4 ATCO Gas Building

There are no handrails provided at the exterior of Pumphouse No.1 and as such, this Section is not applicable.

4.10 ACCESS TO PARKING AREAS / PARKING STALLS

Table 4-9: Requirements for Parking Areas

NBC 2019 AE	City of Edmonton Access Design Guide
Sentence 3.8.2.5.(1)(a) **A barrier-free path of travel shall be provided from the entrance referred to in Article 3.8.2.5. to an exterior parking area if exterior parking is provided.**	C.1.1 Barrier-free parking shall be located within 50 m of barrier-free building entrances. If parking is located within a structure, a barrier-free path of travel shall be provided to the nearest barrier-free entrance.
Sentence 3.8.2.5.(2) **Except as provided in Sentence (4), where parking stalls are required by the development authority, made pursuant to the Municipal Government Act and its Regulations, parking stalls for use by persons with disabilities shall be provided in conformance with Table 3.8.2.5.** ***Note: See Table 3.8.2.5. below.**	C.1.2 Low floor accessible vehicles must be considered in the design of the speed bumps. C.1.3 Design considerations shall include a seasonal snow collection area to ensure accessible parking stalls are not used for dumping snow.
Sentence 3.8.2.5.(5) **Parking stalls for use by persons with disabilities required by Sentence (2) or (4) shall be designed in accordance with Article 3.8.3.22.**	C.1.4 Where parking is provided, courtesy parking stalls for seniors and families with young children shall be provided at all main entrances. Provide three courtesy parking stalls for the first 2500 m^2 of building floor area and one stall for every additional 2500 m^2. In additional to the vertical signs, consider including pavement marking in each stall.
Sentence 3.8.3.22.(1) **A parking stall intended for use by persons using a wheelchair or other mobility aid shall** **a) be designed as a 2.4 m wide parking stall adjacent to a 2.4 m wide access aisle where the access aisle is demarcated o indicate no parking,** **b) have a firm, slip-resistant and level surface,** **c) be clearly marked an identified by** **i) a vertically mounted sign, located near the centre line of each designated stall, with the centre of the sign between 1600 to 2500 mm from the finished surface, and**	C.1.5 Courtesy parking stalls, barrier-free stalls and the access aisles adjacent to them shall be paved. C.1.6 Barrier-free parking areas shall be designed so that people do not have to pass behind other parked vehicles. C.1.7 Where feasible, provide barrier-free and courtesy parking stalls that are adjacent to the “building side” of the parking lot to eliminate the need to cross parking drive aisles. C.1.8

NBC 2019 AE	City of Edmonton Access Design Guide
ii) the International Symbol of Access painted on the pavement, **d) be located near to or adjoining a barrier-free path of travel leading to the nearest barrier-free entrance and,** **e) be designed so that parked vehicles shall not obstruct access onto an elevated and level surface.**	If barrier-free / courtesy parking stalls are located across a shared pathway connecting the parking stalls shall be designed so that a high contrast crosswalk connects the front entrance to the barrier-free / courtesy parking stalls.
	C.1.9 The shared pathway shall connect pedestrians through to the end of the parking lot and connect any other adjacent lots, sidewalks or multi-use shared trails leading to the facility. If this shared pathway crosses a driveway, pedestrian crossing signs and painted markers shall be provided. C.1.10 Parking stalls shall be designed so that vehicles or other obstructions do not encroach on the barrier-free path of travel regardless of its width (i.e., providing wheel stops).
	C.1.11 Level changes between pedestrian and parking areas shall be minimized to ensure that curb ramp slopes do not exceed 6%. C.1.12 If “staff online” and “visitor only” parking stalls are provided, barrier-free staff and / or visitor parking stalls must be considered.

NBC 2019 AE Table 3.8.2.5.
Designated Parking Spaces – Forming Part of Sentence 3.8.2.5.(2)

Number of Parking Stalls Required	Number of Designated Stalls for Use by Persons with Physical Disabilities
2-10	1
11-25	2
26-50	3
51-100	4
for each additional increment of 100 or part thereof	one additional stall

4.10.1 Low Pressure Plant

Existing Condition

There is currently no designated parking lot for the Low-Pressure Plant. Cars are able to park immediately adjacent to the building. Demarcation of parking stalls was not reviewed on site due to snow cover. However, it based on an approximate view, it appears that no more than 25 cars are able to be parked adjacent to the building. No signage for accessible parking stalls is provided.

Required Modifications

Accessible stalls are required to be provided in accordance with the requirements listed under Table 4.10 and Table 3.8.2.5. excerpt from NBC 2019 AE. With a total of 25 cars, 2 accessible stalls are required to be provided.

4.10.2 Pumphouses No.1 and No.2

Parking stalls are not provided for Pumphouses No.1 and No.2 as these buildings are accessed via a sidewalk near the river.

4.10.3 ATCO Gas Building

Parking stalls are not provided for the ATCO Gas building as this building is accessed off a roadway. Should parking be provided for the ATCO Gas building in the new design, sufficient space is required to barrier-free accessible stalls to ensure maneuverability. In addition, barrier-free parking stalls are required to be provided in accordance with ABC Table 3.8.2.5.

4.11 BARRIER-FREE PATH OF TRAVEL (INTERIOR)

Table 4-10: Requirements for an Interior Barrier-Free Path of Travel

NBC 2019 AE	City of Edmonton Access Design Guide
Sentence 3.8.2.3.(1) **Except as permitted by Sentence (2), (4) and (5), a barrier-free path of travel from the entrances required by Sentences 3.8.2.2.(1) and (2) shall be provided throughout all normally occupied floor areas.**	F.1.1 An interior barrier-free path of travel shall be 1800 mm wide in a public corridor or a corridor used by the public that serves floor areas with an estimated occupant load of more than 200, and in suites or rooms with an estimated occupant load of more than 200. F.1.2 Where a barrier-free path of travel turns a corner, the corner shall be designed to allow a person using a mobility aid to turn in a clear space that has a diameter or not less than 1800 mm.
Sentence 3.8.2.3.(3) **Unless a barrier-free path of travel is not required in an assembly occupancy by Clause (2)(i), the number of spaces designated for use by persons using wheelchairs within rooms or areas with fixed seats shall conform to Table 3.8.2.3. and be dispersed** **a) in each floor level of seating,** **b) in each price range of seating, and** **c) in each viewing section of seating.** ***Note: See Table below.**	F.1.3 All columns in a barrier-free path of travel shall have colour contrast with the adjacent surfaces to ensure high visibility. F.1.4 All floor finished shall be stable, slip-resistant, non-glossy, and designed to reduce glare. Pattern design shall be kept to a minimum. The coefficient of friction shall be no less than 0.5 when wet or dry.
Sentence 3.8.2.3.(4) **Except as provided by Sentence (5), and except for a storey containing a physician clinic or office within the scope of Subsection 3.8.5., Sentence (1) does not apply to any storey, not more than 600 m^2 in area, above or below the first storey of a building that does not exceed two storeys in building height.**	F.1.5 Carpet on floor surfaces shall be securely attached. Carpets with a tight weave, low pile and firm underlay are recommended. F.1.6 All changes in elevation including ramps, landings and treads shall be indicated using tactile and colour contrast.
Sentence 3.8.3.2.(1) **Except as required elsewhere in this Part or as permitted by Article 3.8.3.6. pertaining to doorways, the unobstructed width of a barrier-free path of travel shall not be less than 920 mm.**	F.1.7 Where wall surfaces include mirror or glass, a horizontal warning strip (i.e., vinyl film) or graphics of minimum 150 m width shall be provided at 1350 mm above floor level. F.1.8 All storeys and mezzanines, where public are permitted, must be reachable by a barrier-free path of travel served by an elevator or other elevating device.
Sentence 3.8.3.2.(2) **Interior and exterior walking surfaces that are within a barrier-free path of travel shall**	

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a) have no opening that will permit the passage if a sphere more than 13 mm in diameter, b) have any elongated openings oriented approximately perpendicular to the direction of travel, c) be stable, firm and slip-resistant, d) have a cross slope no steeper than 1 in 50, e) be beveled at a maximum slope of 1 in 2 at changes in level between 6 and 13 mm, and f) be provided with sloped floors or ramps at changes in level more than 13 mm.	
Sentence 3.8.3.2.(3) A barrier-free path of travel is permitted to include ramps, passenger elevators or other platform-equipped passenger-elevating devices to overcome a difference in level.	
Sentence 3.8.3.2.(4) The width of a barrier-free path of travel that is more than 30 m long shall be increased to not less than 1500 mm for a length of 1500 mm at intervals not exceeding 30 m.	

NBC 2019 AE Table 3.8.2.3.
Designated Wheelchair Spaces – Forming Part of Sentence 3.8.2.3.(3)

Number of Fixed Seats in Seating Area	Number of Spaces Required for Wheelchairs
2-100	2
101-200	3
201-300	4
301-400	5
401-500	6
501-900	7
901-1300	8
1301-700	9
each increment of up to 400 seats in excess of 1700	one additional space

Access Design Guide Table G.4.3.

Number of Fixed Seats	Designated Spaces for Wheelchair Users
2-100	4
101-200	5

Number of Fixed Seats	Designated Spaces for Wheelchair Users
201-300	6
301-400	7
401-500	8
501-900	9
>900	number of wheelchair spaces shall be equal to 1% of total fixed seating

4.11.1 General

Should spaces with fixed seating be provided in any of the buildings, aisles and fixed seating are required to conform to Articles 3.3.2.4. and 3.3.2.5. In addition, Section G4 under the Access Design Guide should be referenced for places of assembly.

4.11.2 Low Pressure Plant

Existing Condition

Within the Low-Pressure Plant (including Switch House, Turbine Hall and Boiler Hall), the following describes the existing conditions of the common barrier-free path of travel:

- interior stairs as main access to main floor area without ramp of elevating devices,
- uneven surface finishes (i.e., protrusions from the ground due to cement and unfinished / damaged floors) that can cause tripping hazards or mobility aid hazards,
- low headroom clearance in the basement areas,
- stairs with open risers,
- door openings directly onto flight of stairs, and
- floors provided with glossy finishes.

Required Modifications

Table 4.11 refers to the required modifications for the Low-Pressure Plant, specific to a barrier-free path of travel.

In the event that the Low-Pressure Plant is used for an assembly occupancy (Group A) with fixed seating, the seating is required to be provided in accordance with Table 3.8.2.3.

4.11.3 Pumphouses No.1 and No.2

Existing Condition

Within both pumphouses, the following describes the existing conditions of the common barrier-free path of travel:

- very narrow “catwalk” platforms around floor openings with low guards and large openings,
- interior stairs as main access to main floor area without ramp or elevating devices,
- access to below-grade levels provided through very steeped stairs,
- uneven surface finishes (i.e., protrusions from the ground due to cement and unfinished / damaged floors) that can cause tripping hazards or mobility aid hazards,
- stairs having a width of a 600 mm width,
- stairs provided with open risers,
- no tactile strips provided on stairs,
- multiple obstructions within common path of travel (i.e., building materials), and
- low headroom clearance within the lower tunnel on the main floor.

Required Modifications

Table 4.11 refers to the required modifications to achieve an acceptable barrier-free path of travel within both pumphouses.

4.11.4 ATCO Gas Building

Existing Condition

The ATCO Gas building is mainly provided with a level barrier-free path of travel, except where doors open directly into a flight of stairs at the Relaying Station. In addition, entry into the building is elevated which makes it impossible for a mobility

aid / wheelchair to have access into the building. The level of floor of the building is not consistent and can cause a tripping hazard.

Required Modifications

The required modifications to the barrier-free path of travel within the ATCO Gas building are outlined in Table 4.11.

4.12 DOORWAYS AND DOORS / HARDWARE

Table 4-11: Requirements for Doorways and Doors

NBC 2019 AE	City of Edmonton Access Design Guide
Sentence 3.8.3.6.(2) **Except as required in Article 3.8.5.2., every doorway that is located in a barrier-free path of travel shall have a clear width of not less than 850 mm when the door is in the open position.**	F.2.1 Where a door swings into a barrier-free path of travel, it shall be recessed so that it does not reduce the minimum required width of the barrier-free path of travel.
Sentence 3.8.3.6.(4) **Door-operating devices shall** **a) comply with Clause 3.8.3.8.(1)(b), and** **b) be operable at a height between 900 mm and 1100 mm above the floor.**	F.2.2 Door release hardware shall be mounted at a height of 900 to 1065 mm from the finished floor. Best practice is to provide automatic or power operated doors to all public spaces / amenities.
Sentence 3.8.3.6.(5) **A threshold for a doorway referred in Sentence (2) shall be not more than 13 mm higher than the finished floor surface and shall be beveled to facilitate the passage of wheelchairs.**	F.2.3 Doors which are not equipped with power operators, shall have lever type handles.
***Note: Power door operators are required to be designed in accordance Sentence 3.8.3.6.(6).**	F.2.4 Automatic doors shall have a master control that can control the door closers, keeping the door open for a minimum of eight seconds, with the door held at an angle of 70 – 90-degrees.
Sentence 3.8.3.6.(7) **A cane-detectable guard shall be installed on the hinged side of power-assisted doors that swing open into the path of travel.**	F.2.5 In cases where security is required, the doors may be activated by a key card or remote. The devices shall be installed on an adjacent wall or a floor-mounted post at a minimum distance of 1200 mm back from the door in order to allow proper access. IN the event of a power failure, power-operated doors shall be manually operable.
Sentence 3.8.3.6.(8) **Except as provided in Sentence (9), and except for a door with a power door operator complying with Sentence (6), when unlatched, a door in a barrier-free path of travel shall open when the force applied to the handle, push plate or latch-releasing device is not more than** **a) 38 N in the case of an exterior swinging door,** **b) 22 N in the case of an interior swinging door, or** **c) 22 N in the case of a sliding door.**	F.2.6 Kick plates shall have a colour contrast with the door panel.

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Sentence 3.8.3.6.(10) **A closer for an interior door in a barrier-free path of travel shall have a closing period of not less than 3 s measured from when the door is in an open position of 70-degree to the doorway, to when the door reaches a point 75 mm from the closed position, measured from the leading edge of the latch side of the door.**	F.2.7 Glass doors shall include a warning strip of texture and colour contrast (i.e., etched glass or vinyl film) of minimum 150 mm wide for the entire width of the door and at a starting height of 1350 mm from the finished floor. This strip shall be installed on both sides of the glass.
Sentence 3.8.3.6.(11) **Unless equipped with a power door operator complying with Sentence (6), a swinging door in a barrier-free path of travel shall have a clear space on the latch side extending the height of the doorway and not less than** **a) 600 mm beyond the edge of the door opening if the door swings toward the approach side, and** **b) 300 mm beyond the edge of the door opening if the door swings away from the approach side.**	
Sentence 3.8.3.6.(12) **A vestibule located in a barrier-free path of travel shall arranged to allow the movement of wheelchairs between doors and shall provide a distance between 2 doors in series of not less than 1200 mm plus the width of any door that swings into the space in the path of travel from one door to another.**	
Sentence 3.8.3.6.(13) **Only the active leaf in a multiple-leaf door in a barrier-free path of travel need to conform to the requirements of this Article.**	
Sentence 3.8.3.6.(14) **Except as provided by Clause 3.8.3.5.(1)(c), the floor surface on each side of a door in a barrier-free path of travel shall be level within a rectangular area** **a) as wide as the door plus the clearance required on the latch side by Sentence (11), and** **b) whose dimensions perpendicular to the closed door is not less than the width of the barrier-free path of travel but need not exceed 1500 mm.**	
Sentence 3.8.3.6.(15) **If an entrance is equipped with a security system, both visual and audible signals shall be used to indicate when the door lock is released.**	

4.12.1 Low Pressure Plant

Existing Condition

The following describes the existing condition of doors located within the Low-Pressure Plant:

- approximately 750 mm in width,
- some doors in the Turbine Hall are provided with closing devices and panic hardware,
- doors are colour contrasted from the remainder of the building (blue and orange painted doors),
- latch-side clearances were not provided at most doors within the floor area (not leading to the exterior), and
- multiple doors leading from the Turbine Hall into the Switch House and Boiler Hall into the Turbine Hall encroach on the barrier-free path of travel and do not provide a clear floor space on each side of the door.

Required Modifications

Doors located in a barrier-free path of travel are required to conform to the above-noted requirements listed in Table 4.12. More specifically, if latch-side clearances are not feasible due to the heritage components and construction of the building, power door operators can be introduced.

4.12.2 Pumphouses No.1 and No.2

The following describes the existing condition of doors located within the pumphouses:

- no door hardware provided,
- colour contrasted from the remainder of the building (blue painted doors),
- exceeded thresholds on finished floor surface, and
- meets required door width (i.e.,850 mm) and latch clearance.

Required Modifications

The main entrance doors will require power door operators and necessary door hardware for convenience and ease of access for occupants. The doors will also require a level finish to allow access for wheelchairs / mobility aids.

4.12.3 ATCO Gas Building

Existing Condition

The following describes the existing condition of doors located within the ATCO Gas building:

- 570 mm door widths,
- no door hardware provided, and
- exceeded thresholds on finished floor surface.

Required Modifications

The main entrance doors will require power door operators and necessary door hardware for convenience and ease of access for occupants. The doors will also require a leveled floor finish to allow access for wheelchairs / mobility aids. Doors are required to be modified to accommodate a minimum 850 mm clear width.

4.13 STAIRS (INTERIOR)

Table 4-12: Requirements for Interior Stairs

NBC 2019 AE	City of Edmonton Access Design Guide
***See Article 3.4.6.8. addressed under Section 10.8.5. of the Building Code Section of this report.**	F.3.1 A flight of stairs shall have uniform dimensions and no open risers. F.3.2 Nosings and leading edge of landings shall have a tactile finish with colour contrast and distinctive pattern to demarcate the leading edge of the tread and landing.
	F.3.3

NBC 2019 AE	City of Edmonton Access Design Guide
	Illumination shall be positioned to minimize glare and shadow. F.3.4 If the overhead clearance is reduced, or open areas under hanging stair landings and escalators exit, then a cane detectable barrier (i.e., planters, fencing, benches, railings) extending within the entire associated floor area shall be provided for safety reasons. Best practice would be to enclose the open areas beneath the hanging stair landings and escalators.
	F.3.5 Wherever backs of stairwells are in the public area, there shall be a warning indicator of contrasting colour to alert a potential safety hazard. F.3.6 Changes in elevation at stairwells shall be indicated by a TWSI of colour contrast. F.3.7 IF provided, carpet on stairs shall be securely attached.

4.13.1 Low Pressure Plant, Pumphouses No.1 and No.2

Existing Condition

The stairs located within the Low-Pressure Plant and both pumphouses are mostly provided with open risers and narrow treads, are not provided with tactile strips and are not provided adequate illumination.

Required Modifications

Stairs located within the building are required to conform to the requirements listed under Table 4.13 and Article 3.4.6.8.

4.13.2 ATCO Gas Building

Existing Condition

Only one stair is located within the ATCO gas building and is adjacent to at a door opening in the Relay Station. This stair is not provided with handrails, has open risers, and is not provided with tactile strips.

Required Modifications

Stairs located within the building are required to conform to the requirements listed under Table 4.13 and Article 3.4.6.8.

4.14 HANDRAILS (INTERIOR)

Table 4-13: Requirements for Interior Handrails

NBC 2019 AE	City of Edmonton Access Design Guide
*** See Article 3.4.6.5. addressed under Section 10.8.3. of the Building Code Section of this report.**	F.4.1 Handrails shall be splinter and rust proof, located on both sides of stairs and ramps and shall have colour contrast with the wall or surrounding area. F.4.2 All handrails shall terminate to the wall or ground and have a consistent system of tactile cues, such as notches,

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	dimples, grade 1 braille, raised numbers or other texture changes within the last 300 mm s both ends of the handrail before it changes direction to the ground or wall.
	F.4.3 Ensure guards and / or handrails are installed at viewing platform and windows with views. At areas without fixed seating, provide guard to lean onto.

The handrails located in all buildings are rusted and difficult to grasp and are not provided with extensions. On multiple stairs, only one handrail is provided instead of a handrail on both sides. Handrails appear to have been painted in yellow but are mostly chipped away due to the age of the building. Stairs located within the building are required to conform to the requirements listed under Table 4.14.

4.14.1 ATCO Gas Building

The ATCO Gas building is provided with a stair that does not have a handrail. Handrails are required to be provided based on the requirements listed under Table 4.14 for this stair.

4.15 GUARDS (INTERIOR)

Table 4-14: Requirements for Interior Guards

NBC 2019 AE	City of Edmonton Access Design Guide
*** See Article 3.4.6.6. addressed under Section 10.8.4. of the Building Code Section of this report.**	N/A

The guards located in the building (i.e., around floor openings in multiple height storeys and at the mezzanine level in the Boiler Hall) are provided with massive openings that creates an extreme hazard for occupants. Guard openings range from 530 mm to 920 mm which can create a severe falling hazard if a person is standing too close to the edge and accidentally slips. Sentence 3.4.6.6.(5) states that the passage of a spherical object whose diameter is more than 100 mm between guard elements is not permitted. Since these openings are much larger than 100 mm, these guards are either required to be replaced, or protective shields need to be installed at the gap openings to close off these openings. In addition, these guards are not permitted to facilitate climbing.

4.16 PASSENGER ELEVATING DEVICES / ELEVATORS / CONTROLS

Table 4-15: Requirements for Passenger Elevating Devices

NBC 2019 AE	City of Edmonton Access Design Guide
Sentence 3.8.3.7.(1) **Where passenger elevators are used in a barrier-free path of travel, features in Appendix E of ASME A17.1/CSA B44, "Safety Code for Elevators and Escalators" shall be included in their design and construction.**	F.5.1 Provide a minimum clear space of 1800 m x 1800 mm in front of elevator doors. F.5.2 The interior dimensions of at least one elevator shall be a minimum of 1828 mm x 2032 mm to allow for a larger turning radius of the wheelchairs and the transportation of a stretcher with two caregivers (i.e., for emergency services).
Sentence 3.8.3.7.(2) **A platform-equipped passenger-elevating device used in a barrier-free path of travel shall conform to the**	F.5.3 Call buttons shall be installed at 1000 + / - 100 mm above the finished floor, measured to the centre of the panel.

NBC 2019 AE	City of Edmonton Access Design Guide
Elevating Devices Codes Regulation made pursuant to the Safety Codes Act.	F.5.4 Call buttons shall be located on each wall between elevators and shall be easily identifiable by colour contrast and raised symbols.
Sentence 3.8.3.8.(1) **Controls described in this Section shall** **a) where located in or adjacent to a barrier-free path of travel, and unless otherwise stated, i) be mounted 400 mm to 1200 mm above the floor, ii) be adjacent to and centered on either the length or the width of a clear floor space of 1350 mm by 800 mm and** **b) be operable i) with one hand in a closed fist position, without requiring tight grasping, pinching with fingers, or twisting of the wrist, and ii) unless otherwise states, with a force not more than 22 N.**	F.5.5 Call buttons shall protrude to enable a user to push easily. F.5.6 Make elevator door clearances are large as possible (and a minimum of 1140 mm). F.5.7 Elevator doors shall begin to close after a minimum of 8 seconds from the fully open position. F.5.8 Audible communication system shall be available for the visually impaired for accessing elevators. Inside the elevator car, audible announcements identifying the direction of travel shall be provided.
	F.5.9 Colour contrast shall be used to differentiate the floor registration button panel from the elevator car background or where it is located. F.5.10 All elevator waiting areas must have choices for seating in close proximity. Signs showing priority seating for people with limited mobility shall be provided.

Functioning elevators are not currently provided in any of the buildings. Due to the height of the buildings and the proposed uses (i.e., assembly spaces, office spaces, mercantile spaces), barrier-free access is required to be provided on all levels. As such, either a barrier-free lift or an elevator is required to be provided in each building.

Where floor areas do not propose a barrier-free path of travel (i.e., service spaces or hazardous areas), elevators are not required to extend to those floor levels. Note that in occupancies such as kitchens or garbage rooms for retail, barrier-free access is not exempt from those areas and should be considered during design.

4.17 PLUMBING FACILITIES / WASHROOMS

Table 4-16: Requirements for Plumbing Facilities and Barrier-Free Washrooms

NBC 2019 AE	City of Edmonton Access Design Guide
Sentence 3.8.2.8.(1) **All washrooms in a barrier-free path of travel shall be barrier-free in accordance with Subsection 3.8.3.**	J.1.1 If public washrooms are present, ensure adequate wayfinding signage is provided outside of the building to indicate that there are washrooms location inside which are available to the public.
Sentence 3.8.2.8.(3)(a)	J.1.2

NBC 2019 AE	City of Edmonton Access Design Guide
In a building in which water closets are required in accordance with Subsection 3.7.2., at least one barrier-free water closet shall be provided in the entrance storey unless a barrier-free path of travel is provided to barrier-free water closets elsewhere in the building.	Barrier-free washrooms shall be provided on every barrier-free accessible floor. J.1.3 Barrier-free washrooms shall be located along the barrier-free path of travel.
Sentence 3.8.2.8.(4) **Where alterations are made to an existing building, universal washrooms complying with Subsection 3.8.3. are permitted to be provided in lieu of facilities for persons with physical disabilities in washrooms used by general public.**	J.1.4 Provide gender inclusive washrooms for all occupants and a minimum of two self-contained barrier-free washrooms one very barrier-free accessible floor.
Sentence 3.8.2.8.(5) **If more than one water closet is provided in a washroom required to be barrier-free, a barrier-free stall complying with Subsection 3.8.3. shall be provided for every 10 stalls or part thereof.**	J.1.5 If only gender-specific washrooms are provided, a minimum of one self-contained barrier-free gender-inclusive washrooms shall be provided in addition to the required barrier-free stalls.
Sentence 3.8.2.8.(6) **Where urinals are provided in a barrier-free washroom, at least one urinal shall comply with Subsection 3.8.3.**	J.1.7 Baby change tables shall not be located inside barrier-free stalls but shall be provided in both gender inclusive and / or gender specific washroom common areas.
Sentence 3.8.2.8.(7) **A barrier-free washroom shall be provided with a lavatory that complies with Subsection 3.8.3.**	J.1.8. A minimum clear turning space of 1800 mm diameter shall be provided inside the barrier-free washroom stall.
Sentence 3.8.2.8.(8) **Where mirrors are provided, at least one shall comply with Subsection 3.8.3.**	J.2.1 Provide doorless entrance to the washroom facility (i.e., L-shaped entrance), where possible.
Sentence 3.8.2.8.(9) **Where drinking fountains are provided, at least one shall comply with Subsection 3.8.3.**	J.2.2 Doorless entrances with an L-configuration shall have only one turn with a clear corner and a minimum depth of 1200 mm. Where a maze entrance exists for a public washroom, the floor finish shall be slip-resistant and be high colour contrast to the wall finish.
Sentence 3.8.2.8.(10) **Where showers are provided in a building, at least one shower shall comply with Subsection 3.8.3., except where showers are provided within an** **c) an industrial occupancy,** **d) a business and personal services occupancy where the showers are not required for provision of hygienic services related to the business, or** **e) a mercantile occupancy.**	J.2.3 Doors leading into washroom facilities containing barrier-free stalls and self-contained gender inclusive washroom stalls shall be equipped with power door operators. Avoid providing two doors in quick succession. J.2.4 Doors of barrier-free washroom stalls shall be designed to swing outwards and shall be equipped with spring or gravity hinges that slowly close the door.

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***Note: Water closet stalls are required to be designed in conformance with Article 3.8.3.11.**	J.2.5 Where doors to water closet stalls swing outward, it is preferred that they swing against a side wall so as not to impede the flow of traffic or cause injury to a person passing by on the other side of the stall door. If the door of the stall swings inward, there shall be an additional 900 mm of space to allow an occupant in a wheelchair to close the door from within the stall.
***Note: Universal washrooms are required to be designed in accordance with Article 3.8.3.12.**	J.2.6. The door pull shall be a D-shaped handle at least 140 mm in length and mounted in a horizontal position to allow for optimal leverage. The midpoint of the handle shall be located not less than 200 mm from the edge of the door on the hinged side. As well, measured from the midpoint to the floor, the handle shall not be less than 900 mm and not more than 1000 mm.
***Note: Urinals are required to be designed in accordance with Article 3.8.3.14.**	J.2.7 Doors and stall partitions shall have colour contrast to the floor and wall finishes.
***Note: Lavatories and mirror are required to be designed in accordance with Article 3.8.3.15.**	J.2.8 A minimum of 920 mm clear space shall be provided from the leading edge of stall doors, when a stall door is in open position.
***Note: Showers are required to be designed in accordance with Article 3.8.3.16.**	*Note: Washrooms fixtures are required to be designed in accordance with Section J.3.
	*Note: Barrier-free washroom stalls are required to be designed in accordance with Section J.4.
	*Note: Barrier-free shower stalls are required to be designed in accordance with Section J.7.

Currently, the only washrooms provided on the project site are in the Switch House within the Low Pressure Plant. Since different occupancies are proposed in the building, the number of washrooms and the design requirements differ between occupancies. Washroom calculations have been included under Section 12 of the Code section of this report. Washrooms calculations based on different occupancies within the building have been included below.

Table 4-18: Accessible Washroom Requirements

Building	Occupancy	Occupant Load		Number of Washrooms		Number of Gender Inclusive Washrooms	Number of Accessible Washrooms
		Male	Female	Male	Female		
Turbine Hall (Forming Part of Low	Assembly (A1)	1821	1821	14	27	41	2 (2)
	Assembly (A2)	1437	1437	12	23	35	

Building	Occupancy	Occupant Load		Number of Washrooms		Number of Gender Inclusive Washrooms	Number of Accessible Washrooms
		Male	Female	Male	Female		
Pressure Plant)	Business and Personal Services (D)	147	147	4	4	8	
	Mercantile (E)	369	369	--	--	--	
Switch House (Forming Part of Low Pressure Plant)	Assembly (A1)	791	791	8	16	24	
	Assembly (A2)	624	624	8	15	23	
	Business and Personal Services (D)	64	64	3	3	6	
	Mercantile (E)	160	160	--	--	--	
Boiler Hall (Forming Part of Low Pressure Plant)	Assembly (A1)	3078	3078	20	39	59	
	Assembly (A2)	2430	2430	17	33	50	
	Business and Personal Services (D)	248	248	6	6	12	
	Mercantile (E)	624	624	--	--	--	
Pumphouse No.1	Assembly (A1)	212	212	5	9	14	10
	Assembly (A2)	167	167	4	7	11	
	Business and Personal Services (D)	17	17	1	1	2	
	Mercantile (E)	43	43	--	--	--	

Building	Occupancy	Occupant Load		Number of Washrooms		Number of Gender Inclusive Washrooms	Number of Accessible Washrooms
		Male	Female	Male	Female		
Pumphouse No.2	Assembly (A1)	741	741	8	16	24	12
	Assembly (A2)	585	585	7	14	21	
	Business and Personal Services (D)	60	60	3	3	6	
	Mercantile (E)	150	150	--	--	--	
ATCO Gas Building	Assembly (A1)	49	49	1	2	3	2
	Assembly (A2)	38	38	1	2	3	
	Business and Personal Services (D)	4	4	1	1	2	
	Mercantile (E)	10	10	1	1	1	

Notes:

1. Two barrier-free washrooms are required to be provided for every accessible floor area per Section J.1.4 of the Edmonton Access Design Guide.
2. Since the Low Pressure Plant (including the Turbine Hall, Boiler Hall and Switch House) is considered one building, only 2 barrier-free washrooms are required as the building is one storey in building height. However, if it is intended to divide these floor areas, washrooms should be distributed for each area.

Sincerely,

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Consultant Responses to CP-9673 RPP AAPR PD01 - Alberta Culture Review

2020-06-30

COMMENT #	REFERENCE	PAGE	COMMENT	CONSULTANT'S RESPONSE
01	N/A	N/A	Corrections needed for labels under "Building Condition Assessment" in cheat sheet.	Noted and corrected, thanks.
02	N/A	N/A	Recommend proof reading/editing in general – minor/minimal wording, typing and formatting mistakes noted for written reports	Noted.
03	N/A	N/A	Be mindful of copy/paste transfers – most notably between Building Condition Assessments of Pump Houses (i.e. front door and electrical).	Noted.
04	Building and Fire Code Assessment	TOC	There appears to be an error in the content table at the Building and Fire Code Assessment as the pages are listed in roman numerals	Noted and corrected, thanks.
05	Building and Fire Code Assessment	Section 1.5	Section 1.5 of Building Code Assessment indicates that no floor plans were reviewed but included in appendix?	This will be corrected in the final report.
06			Conservation Plan has yet to be uploaded.	Corrected.
07			Overall, I think the information provided is good and I look forward to discussing further at the next meeting.	Noted, thanks.
08			Recommend light proof reading for very minor typing/wording mistakes but more formatting issues (i.e. line breaks and empty spaces/pages around photos/images).	Noted, thanks.
09			The highlighted section on Pump House #1 to possibly relocate existing equipment to Pump House #2 would go against Standard 4 of the S&Gs which states: "Recognize each historic place as a physical record of its time, place and use. Do not create a false sense of historical development by adding elements from other historic places or other properties or by combining features of the same property that never coexisted." As this is highlighted along with other sections (i.e. the ATCO Gas Building), I understand that this will be edited/removed in the next version.	Yes, this will be removed in the final report.
10			I believe that there were glitches noted in the table of contents/reference pages.	Noted and corrected, thanks.
11			Overall, I think that this Conservation Plan will be a useful tool and I look forward to the future discussions on interventions that it will lead to.	Thanks!

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Consultant Responses to CP-9673 RPP AAPR PD01 - Architectural Review

2020-06-30

COMMENT #	REFERENCE	PAGE	COMMENT	CONSULTANT'S RESPONSE
01	Building and Fire Code Assessment	N/A	Lot of information is included in terms of Code requirements. But it is not always clear on how the existing conditions fare against those requirements. If existing items are determined to be non compliant, adding a sentence pointing out the non-compliance would suffice. [Comment do not apply to accessibility section]	We can endeavor to identify the applicable code nonconformance(s) where they occur and additionally where they could be applied to the range of [future] occupancies proposed. In some areas it is difficult to identify a noncompliance for a certain occupancy type as this could differ slightly from another occupancy type (where that noncompliance is not appropriate or deemed as such).
02	Building and Fire Code Assessment	N/A	Would it be possible to add an executive summary to sum up the level of impact that each major occupancy will have on the buildings?	Yes, we can identify this at a "high-level" in executive summary form at the beginning of the report.
03	Building and Fire Code Assessment	p. 9	Table 3.2 and 3.3: Is D occupancy an anticipated occupancy for Pumphouse # 1 and 2 due to the layout of these two buildings?	The occupancy types for each building are set, although an occupancy might not be proposed for a specific building, we have provided the information to each building, not knowing at this time what the future occupancy could/would be.
04	Building and Fire Code Assessment	p. 11	Table 3.5: It would be helpful to include the minimum rating required for loadbearing walls, columns and arches. At least in brackets? [Comment also applies to Table 3.6].	Noted, we will apply the minimum fire resistance rating(s) required for loadbearing walls, columns and arches [where applicable].
05	Building and Fire Code Assessment	p. 34	Tables showing 'Occupant Load Analysis vs. Exiting Provisions': Would it be possible to add existing conditions to this table or is that still being determined?	During the site visit, many existing exiting doors were locked shut, we can take the measurement from the Architectural drawings to establish the existing exiting width provisions and add this into the relevant table.
06	Building and Fire Code Assessment	p. 40	12.0 Vertical transportation: Which buildings does this section apply to?	We will update and provide further details within the report to where this is required and where this would be triggered.
07	Building and Fire Code Assessment	p. 41	13.0 Washroom requirements: Can a column be added to indicate the number of washrooms required, if we go with all universal (gender-inclusive) washrooms?	Yes, this information can be added. Generally, the number of washrooms required for gender-inclusive purposes would be the sum of those required for both male and female washrooms. This value may change if the occupant load changes throughout the life of the project / design progression. In addition, barrier-free requirements for those washrooms will be revised in the final report to indicate that only 2 barrier-free washrooms are required to be provided for each floor area proposed to contain a barrier-free path of travel, per the Edmonton Access Design Guide.
08	Building and Fire Code Assessment	p. 42	Section 14.0 is titled INTRODUCTION without an indication that this is an introduction to a new section, accessibility. Please revise the title for clarity.	Yes, the final report will be provided with a proper introduction to the Accessibility portion of the report for clarity.

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COMMENT #	REFERENCE	PAGE	COMMENT	CONSULTANT'S RESPONSE
09	Building Condition Assessments		2.1 Civil/Landscape: Same information is included for condition assessments of all buildings. Some of the information included for the Low Pressure Plant is not relevant for the pump houses or ATCO Gas building. Can this section be customized for the pumphouses and ATCO Gas building by removing non-applicable items?	Yes, this will be updated in the final version of the assessment reports.
10	Conservation Plan	p. 20	The City Plan was approved by Council in December 2020.	Noted, thanks. This will be updated in the final report.
11	Conservation Plan	p. 42	Criteria table: Does Building Code requirements fall under 'Health and Safety/Security'?	Yes.

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COMMENT #	REFERENCE	PAGE	COMMENT	CONSULTANT'S RESPONSE
01	Photographic Record Documents	p.3	P. 3 of each Photographic Record document says that all photographic data is from MiraCAD or drone footage "with the exception of photograph #8, which was taken by a Pixel 3a Smartphone Camera." Each document has its own numbering so I'm assuming that this photograph #8 taken by the Pixel 3a is only in one of the Photographic Record documents and not them all.	Noted and corrected, thanks.
02	Switch House Condition Assessment	p. 35	Looks like a word is missing in the final paragraph. Was it intended to read "...there is a notable lack of trolley stops"?	Noted and corrected, thanks.
03	Switch House Condition Assessment	p. 45	Should read "its" rather than "it's" in second sentence of Natural Gas paragraph.	Noted and corrected, thanks.
04	Switch House Condition Assessment	p.48	This states that the temporary glycol heating system is "adequate for heating to preserve the foundation and no changes are recommended unless maintaining the system in place is cost prohibitive." I would like one or two more sentences recommending what we should do if the system in place is deemed to be cost prohibitive.	We will update the recommendation accordingly.
05	Switch House Condition Assessment	p. 53	The first sentence under heading 2.6.6 refers to the Turbine Hall which appears to be a boilerplate error, since this document pertains not to the Turbine Hall but to the Switch House.	Noted and corrected, thanks.
06	Turbine Hall Condition Assessment	p. 44	Should read "its" rather than "it's" in second sentence of Natural Gas paragraph.	Noted and corrected, thanks.
07	Turbine Hall Condition Assessment	p. 47	This states that the temporary glycol heating system is "adequate for heating to preserve the foundation and no changes are recommended unless maintaining the system in place is cost prohibitive." I would like one or two more sentences recommending what we should do if the system in place is deemed to be cost prohibitive.	We will update the recommendation accordingly.
08	Turbine Hall Condition Assessment	p. 52	"It is important to note that there are structural members which are at or could be near the end of their life-cycle." I thought part of the purpose of this report is to identify what's good and what isn't. Does a "things could be bad" statement impugn the structural integrity of the building, or is that intended to just be a flag for future detailed design in adaptive reuse work?	Statement is intended to note structure cost can be expected to upgrade and maintain structure. It is not intended to indicate the structure is no longer usable, and we will update comments to better reflect it.

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COMMENT #	REFERENCE	PAGE	COMMENT	CONSULTANT'S RESPONSE
09	Boiler Hall Condition Assessment	p. 14	Second sentence refers to Turbine Hall, which looks to be a boilerplate error.	Noted and corrected, thanks.
10	Boiler Hall Condition Assessment	p. 51	Should be "its" rather than "it's" in second sentence of Natural Gas paragraph.	Noted and corrected, thanks.
11	Boiler Hall Condition Assessment	p. 54	This states that the temporary glycol heating system is "adequate for heating to preserve the foundation and no changes are recommended unless maintaining the system in place is cost prohibitive." I would like one or two more sentences recommending what we should do if the system in place is deemed to be cost prohibitive.	We will update the recommendation accordingly.
12	Boiler Hall Condition Assessment	p. 60	"It is important to note that there are structural members which are at or could be near the end of their life-cycle." I thought part of the purpose of this report is to identify what's good and what isn't. Does a "things could be bad" statement impugn the structural integrity of the building, or is that intended to just be a flag for future detailed design in adaptive reuse work?	Statement is intended to note structure cost can be expected to upgrade and maintain structure. It is not intended to indicate the structure is no longer usable, and we will update comments to better reflect it.
13	Pump House 1 Condition Assessment	-	Page numbers missing throughout.	Noted and corrected, thanks.
14	Pump House 2 Condition Assessment	-	Page numbers missing throughout.	Noted and corrected, thanks.
15	Pump House 2 Condition Assessment	Wet Mud page	"wed mud deposits" is a typo. Great schematic explaining the water ingress issue, though!	Noted and corrected, thanks.
16	Building and Fire Code Assessment	p. 3	In the paragraph after the bullets, remove the apostrophe after "buildings."	Noted and corrected, thanks.
17	Building and Fire Code Assessment	p. 31	The total calculated occupant loads seem really high. 1425 people on the main floor of the Turbine Hall? 1065 people on the mezzanine level of the Boiler Hall? 424 people in Pumphouse #1? 1481 people in Pumphouse #2? I just want to ensure that how we're calculating the area is accurate. These numbers are the basis of other calculations so they have to be realistic. For example, on page 41, the occupancy numbers total up to 11,380 people needing 124 water closets plus 14 barrier-free washrooms (p. 68) for a total of 128. Eleven thousand people in the Low Pressure Plant seems impossible and the washroom numbers seem astronomical to me.	The occupancy calculations identified in the assessment are a product of applying the Code-defined ratios of area per person. In practice the final determination of occupancy type, likely coupled with a design occupant load (which limits the number of people permitted to occupy portions of each of the buildings at any one time) would be used to limit the number of (amongst other things) washroom fixtures required. We will add a clarifying note to this effect.

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COMMENT #	REFERENCE	PAGE	COMMENT	CONSULTANT'S RESPONSE
18	Conservation Plan part 1	p. 22	Section 4.5 of the River Crossing Business Plan actually doesn't have any text about the power plant, but the map in this section shows the power plant as being intended for Institutional / Cultural uses. This wouldn't preclude commercial uses, but the reference to at-grade commercial in section 4.5 of the business plan is to streetfronts on 96 Ave and 104 St north of the power plant. Please combine the two (A) sections under the section 4.5 heading on p. 22 and correct them accordingly.	Noted and corrected, thanks.
19	Conservation Plan part 1	p. 23	The sentence "The Rivers Crossing Business Plan is legally supported through zoning by the Rossdale Area Redevelopment "Bylaw 8139..." is not exactly correct. The Rossdale Area Redevelopment Plan was adopted in 1986 and we are now in the process of updating the ARP on the basis of the Business Plan. Replace this with something like the following: "The City is now in the process of updating the Rossdale Area Redevelopment Plan on the basis of the River Crossing Business Plan. The boundary of the ARP is shown on the following map. The City is also in the process of updating the zoning that applies to the power plant complex to reflect the scope of possible future uses."	Noted and corrected, thanks.
20	Conservation Plan part 1	p. 36	Should read "Stone masons" instead of "Stone mason's".	Noted and corrected, thanks.
21	Conservation Plan part 1	p. 36	Footnote 28 appears to be misplaced.	Noted and corrected, thanks.
22	Conservation Plan part 1	p. 72	John Poole was the son of PCL founder Ernest Poole. Perhaps write "(who later became co-owner of construction firm known as PCL, formerly Poole Construction Limited, and a prominent Edmonton philanthropist)".	Noted and corrected, thanks.
23	Conservation Plan part 1	p. 84	p. 84 The first sentence is missing a period.	Noted and corrected, thanks.
24	Conservation Plan part 1	p. 93	The final sentence on the page -- "It is the drainage of the glacial melt Lake Edmonton that led to a rapid down cutting of what we now call the North Saskatchewan River" -- is technically correct but it makes the reader think that the drainage of Lake Edmonton happened through the North Saskatchewan River, when in fact the drainage was the Gwynne Channel (Godfrey, 1993, p. 26-29). It would be clearer to write: "After the glacial-melt Lake Edmonton drained to the southeast, what we now call the North Saskatchewan River rapidly began cutting down its valley."	Noted and corrected, thanks.
25	Conservation Plan part 1	p. 94	Impressive re-drawing / updating of the river valley geological cross-section!	Thanks!

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26	Conservation Plan part 1	p. 96	Given footnote 44, I think you mean "World Wildlife Fund" (capitalized) rather than the World Wildlife Foundation, which is a different, much smaller, organization.	Noted and corrected, thanks.
27	Conservation Plan part 1	p. 97	I think there should be a comma between the two sentences on this page.	Noted and corrected, thanks.
28	Conservation Plan part 1	p. 113, 115	What is the evidence supporting the statement that Cree called Rossdale pehonan? The Executive Summary of the 2004 Rossdale Flats Aboriginal Oral Histories Project said that Rossdale was a pehonan, or gathering place, long before the fur trading era. All subsequent references to pehonan in the Oral Histories Project report, however, come from Louis "Buff" Parry, a non-Indigenous person with an exceptionally curious background that includes writing a book and making documentary about secret societies and years of research about the Holy Grail. Since the Oral Histories Project report was issued, other people locally have applied the term pehonan to Rossdale, but no archival evidence of the name has been demonstrated, and the River Crossing project's extensive Indigenous engagement with First Nation elders and others never connected the term to Rossdale. In the book Castles to Forts: A True History of Edmonton, Metis researcher Phillip Coutu, one of the most involved Indigenous activists associated with the Rossdale burial ground, uses the term pehonan a number of times, but only in connection with the area near the forks, or confluence, of the North and South Saskatchewan Rivers over 500 km to the east of Edmonton. Archaeological evidence indicates that the Rossdale flat had human activity as long as 10,000 years ago, but there is also evidence of similarly old human activity on other river flats in the area. In the words of provincial archaeologist Caroline Hudecek-Cuffe, "There is increasing evidence showing a very long and consistent pattern of Indigenous hunting, camping, and utilization of the diverse resources offered by the river valley and its tributaries in the Edmonton region." On our River Crossing web page, we celebrate the river valley being "a sustaining force, giving people water, food, shelter, and medicine." It is also accurate to say that the Rossdale flat has been a place of human activity for 10,000 years. To suggest that this one river flat, however, was more special, or more sacred, than other, nearby river flats prior to the arrival of the fur trading forts feeds into a narrative with more political purpose than evidentiary support.	"pehonan" here isn't being used as a noun, but as a verb. It is in line as an accepted convention, from Chief Bruno to Edmonton Historical Board website. However, we have now referred to it as Gathering Place instead, to be more inclusive of a multitude of indigenous groups rather than Cree-centric.

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COMMENT #	REFERENCE	PAGE	COMMENT	CONSULTANT'S RESPONSE
29	Conservation Plan part 1	p. 124	The label for the map on this page should read "The green line depicts the possible route of Anthony Henday's expedition..." There are four different versions of Henday's journals with so much variation between them that historians today are loath to follow earlier generations of historians who claimed to have determined with certainty Henday's route. For more information, see Henday, Anthony. A Year Inland, ed. Barbara Belyea. Waterloo: Wilfrid Laurier University Press, 2000.	Noted and corrected, thanks.
30	Conservation Plan part 1	p. 124-125	The write-up about Fort Augustus / Edmonton House I needs to be rewritten as it is based on an incorrect reading of Dylan Reade's 2018 article. Dylan confirmed with me in an 8 Apr 2021 email that he has no contention with the accepted location of Fort Augustus / Edmonton House I "as it seems to be amply documented both archivally and by archaeology" in Dylan's words. It's Fort Augustus II that he thinks was located on the Victoria flat. While we don't yet have concrete archaeological evidence of the fort being in this location, Dylan's article provides the archival evidence supporting his claim, which is consistent with the fact that archaeologist Nancy Saxberg has never found any 1800-1815 artifacts in Rossdale and herself believes that Fort Augustus / Edmonton House II were on the Victoria flat. In other words, the current evidence points to the Rossdale flat as being home only to Fort August / Edmonton House IV between 1813 and 1830, when Edmonton House V was built on what is now the Legislature grounds. This report should reflect this current thinking.	Noted and corrected, thanks.
31	Conservation Plan part 1	p. 125	This sentence at the bottom of the page also needs to be changed in light of my previous comment: "European settlement on the Rossdale flats did not occur until the early 19th century, with Fort Edmonton II & Fort Augustus II (1802- 1810)." As mentioned, evidence points to European settlement on the Rossdale flat beginning in 1813.	Noted and corrected, thanks.

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COMMENT #	REFERENCE	PAGE	COMMENT	CONSULTANT'S RESPONSE
32	Conservation Plan part 1	p. 125	I would also encourage you to consider revising this sentence: "...likely for the same reasons Indigenous Peoples chose Rossdale Flats as a place for encampment for the preceding 10,000 years as land with good river access, flat relatively high land, and largely flood free." Today's high-banked Rossdale flat reflects significant fill added in the 20th century. Binnema and Ens, in the introduction to their 2016 publication of the 1821-1826 Edmonton House Journals, note on p. lxxxv that frequent flooding on the Rossdale flat was the reason for the move to the Legislature grounds site, so Rossdale clearly was flood prone. The fur traders choosing to return in 1813 to what is now the Edmonton area after a failed venture 100 km downstream (Fort Augustus / Edmonton House III, 1810-1812) was obviously done in recognition that the Edmonton area better met their needs, but the specific choice of the Rossdale flat at that time may have been as simple as that it was the next "virgin" flat over from where they had been before 1810. It was probably more nuanced a choice than that -- the Rossdale flat was on the inside of the river's turn and hence away from the strongest flow whereas the Victoria Flat was on the outside of the turn -- but what I think needs to be emphasized in this part of the report is not one flat's superiority over all the others in the vicinity but the general desirability of the Edmonton area. On 9 Apr 2021, I spoke with Alwynne Beaudoin, Director of Natural History at the Royal Alberta Museum and an expert paleoecologist. When I asked her what originally made the Edmonton area attractive to Indigenous peoples, she said that it was "the variety of the landscape." The Edmonton area has a protective valley, is on the margin of the forest, is close to the grassland, is near the Beaver Hills, is a good spot to get across the river, and is convenient to the mountains. "Where you get a lot of ecological complexity," she said, "is where you get a lot of resources."	Noted and corrected, thanks.
33	Conservation Plan part 1	p. 126	Revise the piece about the locations of Edmonton II and IV based on my comments above. Nancy Saxberg and Dylan Reade both think that Edmonton II was on the Victoria flat, though they focus on different edges of that flat. Nancy's work (e.g. image on p. 112 of the Conservation Plan) along with documentary evidence (e.g. the James Bird map on p. 107) strongly connect Edmonton IV with Rossdale.	Noted and corrected, thanks. I circled back with Nancy Saxberg as well [EO].
34	Conservation Plan part 1	p. 128	Is the red box lower on the image than intended?	Yes, noted and corrected, thanks.
35	Conservation Plan part 1	p. 130	Dylan Reade (reade.dylan@gmail.com) has information on how Donald Ross got River Lot 4 in case you want to follow that lead.	Finally made contact, thanks Erik! [EO].

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36	Conservation Plan part 1	p. 130	Donald Ross's hotel was called the Edmonton Hotel. And the "the land underneath the Power Plant" is not "likely," but certainly, "outside of the bounds of the River Lot."	Edited. I found a reference to Ross Hotel at one point and I think that stuck in my head [EO].
37	Conservation Plan part 1	p. 135	Photo caption and footnote should read "Power Plant in Danger."	Noted and corrected, thanks.
38	Conservation Plan part 1	p. 136	Should read "Jasper Avenue's"	Noted and corrected, thanks.
39	Conservation Plan part 1	p. 141	I would recast the final sentence to indicate that the Rossdale Power Plant was the only electrical generating station in Edmonton until Clover Bar opened in 1970.	Noted and corrected, thanks.
40	Conservation Plan part 1	p. 147	Should read "street railway cars"	Noted and corrected, thanks.
41	Conservation Plan part 1	p. 154	Final sentence appears to be a note to the writer.	Noted and corrected, thanks.
42	Conservation Plan part 1	p. 157	The caption for Figure 127 appears garbled: "up to 16 of the plant's boiler technology was..."	Noted and corrected, thanks.
43	Conservation Plan part 1	p. 171	Should read "Mayor Hawrelak"	Noted and corrected, thanks.
44	Conservation Plan part 1	p. 175 - 176	All references to the "City" should be capitalized.	Noted and corrected, thanks.
45	Conservation Plan part 1	p. 183	Be consistent regarding whether to fully capitalize "Whiting." Also, "Whiting" is spelled incorrectly in one place.	Thanks, some confusion based on a report presentation of the name.
46	Conservation Plan part 2	p. 7	Should read "Pump House #2 and the Switch House are included in this draft."	
47	Conservation Plan part 2	p. 7	I'm pleased to see the discussion of deep Indigenous connection to the site but would like to see it called something other than pehonan. As indicated in comments above, no one including you has presented evidence that this one river flat had especial importance before fur trading forts were established on it. What the evidence instead indicates is the importance of the river valley as a whole to Indigenous peoples. I propose replacing the pehonan heading and first two sentences with something like the following: "Indigenous significance: The river valley of which Rossdale is a part has deep Indigenous significance. There is evidence of campsites in Rossdale and other river flats going back 10,000 years. European fur traders were drawn to what is now the Edmonton region because of the number of Indigenous peoples who lived on this land. The establishment of trading forts in Rossdale made it an important gathering space for many First Nations and Metis people -- a place of ceremonies, celebrations, meetings, trade, dance, and games."	Noted and amended. Please refer to response to comment #28.

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COMMENT #	REFERENCE	PAGE	COMMENT	CONSULTANT'S RESPONSE
48	Conservation Plan part 2	p. 7	Surely the phase "arbitrary Eurocentric deli" is an error?	Yes, noted and corrected, thanks.
49	Conservation Plan part 2	p. 7	Should read "(specifically Forts Edmonton & Fort Augustus IV)"	Noted and corrected, thanks.
50	Conservation Plan part 2	p. 8	In heading B, paragraph 1, capitalize "City."	Noted and corrected, thanks.
51	Conservation Plan part 2	p. 9	Should read "Mayors" not "Majors."	Noted and corrected, thanks.
52	Conservation Plan part 2	p. 18	Should read "including Fort Edmonton IV and Fort Augustus IV" and, lower on the page, "Fort Edmonton IV's location at this site..."	Noted and corrected, thanks.
53	Conservation Plan part 2	p. 18	Regarding the text in highlighting, once the Rossdale subdivision is registered, the Rossdale Power Plant will occupy a portion of a 3.72 ha parcel.	Noted and corrected, thanks.
54	Conservation Plan part 2	p. 19	Should read "co-owner of PCL."	Noted and corrected, thanks.
55	Conservation Plan part 2	p. 20	"[This point split as below]" -- is this a note to the writer?	Yes, noted and corrected, thanks.
56	Conservation Plan part 2	p. 27	There are two copies of the same image.	Noted and corrected, thanks.
57	Conservation Plan part 2	p. 48	Should read "...of Fort Edmonton IV."	Noted and corrected, thanks.
58	Conservation Plan part 2	p. 49	In point 5, it should read "...similar to the heritage pattern."	Noted and corrected, thanks.
59	Conservation Plan part 2	p. 50	Is the paragraph that begins "New additions should not attempt..." intended to be part of the Mechanical and Electrical Systems row? It feels like its own Additions row.	Noted and corrected, thanks.
60	Conservation Plan part 2	p. 50	The sentence "While reversibility was once a mantra of the heritage profession re-treatability is recognised as" appears to be unfinished.	Noted and corrected, thanks.
61	Conservation Plan part 2	p. 52	It looks like there is a writer's note at the top of the page.	Noted and corrected, thanks.
62	Conservation Plan part 2	p. 56	The text of the top of the page appears incorrect or missing something.	Noted and corrected, thanks.
63	Conservation Plan part 2	p. 64	What does the Distillery District image have to do with the notion of relocating machinery?	Machinery bit was supposed to be deleted, good catch. Distillery example is about turning windows into doors. I actually physically changed a few when I was a mason myself [EO].

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64	Conservation Plan part 2	p. 70 - 76	I will need to discuss this proposed process with the City's Indigenous Relations Office. My observation is that this looks to be a very resource-intensive process. There is nothing in this write up about how it would relate to engagement with non Indigenous stakeholders and the general public other than saying that "meaningful and clear roles for non-Indigenous collaborators will be critical to the success of the engagement process." Also, unless I'm missing it, there is nothing in this text that explains how the proposed engagement process relates to the conservation phases listed on p. 43. For example, is all of the process indicated recommended to happened as part of the limited, strategic renovations being done as part of the Advanced Assessment and Priority Rehabilitation project in 2021 - 2023, or would all of this process apply to short term work in 2023 - 2028? Or medium term work after 2029? I suggest adding a Staging or Timing subsection to this section of the report.	This will be updated. Not part of AAPR process, because this is a bit more hard nose stabilisation/enabling rather than permanent space-making. There could also be opportunities to run this engagement alongside other area re-development such as the inidgenous park to the north. City Framework will be referenced.
65	Conservation Plan part 2	p. 86	The second sentence in bullet (1) should read "Do salient archival records survive..."	Noted and corrected, thanks.
66	Conservation Plan part 2	p. 86	The second sentence in bullet (2) should read "The authors attempted to make contact but were unsuccessful."	Noted and corrected, thanks.

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COMMENT #	REFERENCE	PAGE	COMMENT	CONSULTANT'S RESPONSE
67	Conservation Plan part 2	p. 87	As noted on p. 126 of the Conservation Plan part 1, there already is a National Historic Site in the vicinity of the Rossdale Power Plant: the misnamed "Fort Edmonton III National Historic Site" that commemorates the location of the final fur trading fort in the Edmonton area, on what is now the grounds of the Alberta Legislature. This NHS, designated in 1959, is embarrassingly documented (e.g. a photo of Fort Edmonton V on the NHS web page is labelled as being Fort Edmonton III) and celebrates an incredibly narrow band of the history of the area. Designating the Rossdale Power Plant as a National Historic Site as suggested on p. 87 would leave the historical error of the existing designation unaddressed and could contribute to a sense of historical designation fragmentation. Please consider revising this text to recommend that the existing NHS designation be amended both in terms of the geography it pertains to and its period of significance. Similar to The Forks National Historic Site, an amended NHS designation could comprehend thousands of years of human history in this central portion of Edmonton's river valley -- from ancient Indigenous use to the fur trade to the settlement period to the present. The City has already had preliminary discussions with the Historic Sites and Monuments Board about this approach. In an 9 Jul 2019 email, Board staff admitted that "the Board's interest in the 1950s was typical of that era, a Eurocentric focus on the fur trade story and, today, many of these traditional stories are being told in a broader, richer fashion. The Historic Sites and Monuments Board of Canada (HSMBC) has updated and expanded other older designations to provide more inclusive histories. On several occasions, these updates have also included a name change." The email encouraged us to submit an amendment application which we have not done yet. If your report were to call for an amendment to the existing designation, it would strengthen the case that the City makes to the Board.	Good strategy about the specific recommendation to incorporate along with Fort Edmonton III (albeit a revision) have incorporated!
68	Conservation Plan part 2	p. 88	Should read "including an isolated area of blue stain."	Noted and corrected, thanks.